```
                    GenCore version 5.1.6
           Copyright (c) 1993 - 2005  Compugen Ltd.

OM nucleic - nucleic search, using sw model

Run on:         July 28, 2005, 08:29:34 ; Search time 660.916 Seconds
                                          (without alignments)
                                          15733.537 Million cell updates/sec

Title:          US-09-551-494-5
Perfect score:  6355
Sequence:       1 gatgttttaatagttttcga..........taaccgccggtagcggccca 6355

Scoring table:  IDENTITY_NUC
                Gapop 10.0 , Gapext 1.0

Searched:       1202784 seqs, 818138359 residues

Total number of hits satisfying chosen parameters:      2405568

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
                 Maximum Match 100%
                 Listing first 45 summaries

Database :       Issued_Patents_NA:*
                1:  /cgn2_6/ptodata/1/ina/5A_COMB.seq:*
                2:  /cgn2_6/ptodata/1/ina/5B_COMB.seq:*
                3:  /cgn2_6/ptodata/1/ina/6A_COMB.seq:*
                4:  /cgn2_6/ptodata/1/ina/6B_COMB.seq:*
                5:  /cgn2_6/ptodata/1/ina/PCTUS_COMB.seq:*
                6:  /cgn2_6/ptodata/1/ina/backfiles1.seq:*

      Pred. No. is the number of results predicted by chance to have a
      score greater than or equal to the score of the result being printed,
      and is derived by analysis of the total score distribution.

                              SUMMARIES
                       %
Result                Query
  No.    Score        Match Length DB  ID                  Description
 -------------------------------------------------------------------------
    1     2468   38.8   6395  3  US-09-259-741-1         Sequence 1, Appli
    2     2468   38.8   6395  3  US-09-037-751-1         Sequence 1, Appli
    3     2468   38.8   6395  3  US-09-466-422-1         Sequence 1, Appli
    4     2468   38.8   6395  4  US-09-962-527-1         Sequence 1, Appli
    5   2466.4   38.8   6395  2  US-08-687-559-2         Sequence 2, Appli
    6   2466.4   38.8   6395  4  US-09-401-415-2         Sequence 2, Appli
    7   2455.4   38.6   6439  3  US-09-259-741-2         Sequence 2, Appli
    8   2455.4   38.6   6439  3  US-09-037-751-2         Sequence 2, Appli
    9   2455.4   38.6   6439  3  US-09-466-422-2         Sequence 2, Appli
   10   2455.4   38.6   6439  4  US-09-962-527-2         Sequence 2, Appli
   11   2452.2   38.6   6475  3  US-09-259-741-4         Sequence 4, Appli
   12   2452.2   38.6   6475  3  US-09-037-751-4         Sequence 4, Appli
   13   2452.2   38.6   6475  3  US-09-466-422-4         Sequence 4, Appli
   14   2452.2   38.6   6475  4  US-09-962-527-4         Sequence 4, Appli
   15   2449.8   38.5   6446  3  US-09-259-741-5         Sequence 5, Appli
   16   2449.8   38.5   6446  3  US-09-037-751-5         Sequence 5, Appli
   17   2449.8   38.5   6446  3  US-09-466-422-5         Sequence 5, Appli
   18   2449.8   38.5   6446  4  US-09-962-527-5         Sequence 5, Appli
   19   2431.2   38.3   6425  3  US-09-259-741-3         Sequence 3, Appli
   20   2431.2   38.3   6425  3  US-09-037-751-3         Sequence 3, Appli
   21   2431.2   38.3   6425  3  US-09-466-422-3         Sequence 3, Appli
   22   2431.2   38.3   6425  4  US-09-962-527-3         Sequence 3, Appli
   23   2286.6   36.0   7685  3  US-09-502-710-22        Sequence 22, Appl
   24   2286.6   36.0   7685  3  US-09-502-710-25        Sequence 25, Appl
   25   2286.6   36.0   7685  3  US-09-502-711-22        Sequence 22, Appl
   26   2286.6   36.0   7685  3  US-09-502-711-25        Sequence 25, Appl
   27   2286.6   36.0   7685  4  US-09-565-616A-1        Sequence 1, Appli
   28   2286.6   36.0   7686  3  US-09-502-710-23        Sequence 23, Appl
   29   2286.6   36.0   7686  3  US-09-502-711-23        Sequence 23, Appl
   30   2286.6   36.0   7687  3  US-09-502-710-24        Sequence 24, Appl
   31   2286.6   36.0   7687  3  US-09-502-711-24        Sequence 24, Appl
   32   2286.6   36.0   7688  3  US-09-502-710-27        Sequence 27, Appl
   33   2286.6   36.0   7688  3  US-09-502-711-27        Sequence 27, Appl
   34     2285   36.0   7926  3  US-09-500-554-1         Sequence 1, Appli
   35     2285   36.0   7926  3  US-09-726-648-1         Sequence 1, Appli
   36     2285   36.0   7926  4  US-10-119-330-1         Sequence 1, Appli
   37   2283.4   35.9   7686  3  US-09-502-710-26        Sequence 26, Appl
   38   2283.4   35.9   7686  3  US-09-502-711-26        Sequence 26, Appl
   39   2283.4   35.9   7686  4  US-09-565-616A-2        Sequence 2, Appli
   40    693.2   10.9   1425  1  US-08-488-672-4         Sequence 4, Appli
   41      690   10.9   1425  4  US-08-708-354-4         Sequence 4, Appli
   42    302.4    4.8   2173  2  US-08-553-619B-6        Sequence 6, Appli
   43    270.2    4.3   1825  1  US-08-176-414B-1        Sequence 1, Appli
   44    270.2    4.3   1825  2  US-08-336-724-1         Sequence 1, Appli
   45    267.8    4.2    807  4  US-09-565-616A-3        Sequence 3, Appli

                              ALIGNMENTS

RESULT 1
US-09-259-741-1
; Sequence 1, Application US/09259741
; Patent No. 6033895
;  GENERAL INFORMATION:
;    APPLICANT:  GARGER, STEPHEN
;    APPLICANT:  HOLTZ, R. BARRY
;    APPLICANT:  McCULLOCH, MICHAEL
;    APPLICANT:  TURPEN, THOMAS
;    TITLE OF INVENTION:  A PROCESS FOR ISOLATING AND
;    TITLE OF INVENTION:  PURIFYING VIRUSES SOLUBLE PROTEINS AND PEPTIDES FROM PLANT
;    TITLE OF INVENTION:  SOURCES
;    NUMBER OF SEQUENCES:  5
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  Howrey & Simon
;      STREET:  1299 Pennsylvania Avenue N.W.
;      CITY:  Washington
;      STATE:  DC
;      COUNTRY:  USA
;      ZIP:  20004
;    COMPUTER READABLE FORM:
;      MEDIUM TYPE:  Diskette
;      COMPUTER:  IBM Compatible
;      OPERATING SYSTEM:  DOS
;      SOFTWARE:  FastSEQ for Windows Version 2.0
;    CURRENT APPLICATION DATA:
;      APPLICATION NUMBER:  US/09/259,741
;      FILING DATE:  February 25, 1999
;      CLASSIFICATION:
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:  09/037,751
;      FILING DATE:  March 10, 1998
;    ATTORNEY/AGENT INFORMATION:
;      NAME:  Halluin, Albert P
;      REGISTRATION NUMBER:  25,277
;      REFERENCE/DOCKET NUMBER:  00801.0140.US01
;    TELECOMMUNICATION INFORMATION:
;      TELEPHONE:  650-463-8100
;      TELEFAX:  650-463-8400
;      TELEX:
;  INFORMATION FOR SEQ ID NO:  1:
;    SEQUENCE CHARACTERISTICS:
;      LENGTH:  6395 base pairs
;      TYPE:  nucleic acid
;      STRANDEDNESS:  single
;      TOPOLOGY:  unknown
;    MOLECULE TYPE:  Genomic RNA
US-09-259-741-1

  Query Match            38.8%;  Score 2468;  DB 3;  Length 6395;
```

```
  Best Local Similarity   44.6%;  Pred. No. 0;
  Matches 2851;  Conservative 1173;  Mismatches 2300;  Indels   66;  Gaps   11;

Qy        20 ACAACAACAATTAAAACAAAAACAACATATTACAAACAACAAACAACAACAATGGCACAC 79
             || |  |  |  |||  | ||||||||:   |   || |   ||||  ||||:|||| ||
Db        18 ACCAACAACAACAAACAACAAACAACAUUACAAUUACUAUUUACAAUUACAAUGGCAUAC 77

Qy        80 ATACAATCTATAATTAGCAACGCCCTTCTTGAAAGCGTGAGTGGTAAAAACACTCTCGTT 139
             | |||  |    |  |     ||  : |: || |  |:  | || || ||| |  : |:
Db        78 ACACAGACAGCUACCACAUCAGCUUUGCUGGACACUGUCCGAGGAAACAACUCCUUGGUC 137

Qy       140 AATGACCTTGCAAGAAGGCGCATGTACGATACGGCCGTGGAAGAATTTAACGCCCGCGAC 199
             ||:|| |: ||||   | ||  : :|||| || || |: ||||| :::||||| || |||
Db       138 AAUGAUCUAGCAAAGCGUCGUCUUUACGACACAGCGGUUGAAGAGUUUAACGCUCGUGAC 197

Qy       200 CGTAGACCAAAGGTCAACTTTTCCAAAACTATTAGCGAAGAGCAAACGCTTCTAGTCTCC 259
             || || || ||||: |||::::| |||   |: ||||| ||||| ||||:: : |   ||
Db       198 CGCAGGCCCAAGGUGAACUUUUCAAAAGUAAUAAGCGAGGAGCAGACGCUUAUUGCUACC 257

Qy       260 AACGCGTACCCGGAGTTCCAGATTACCTTTTATAATACTCAAAATGCCGTACACAGTTTG 319
                |||:| || || ::||| |::|| :::::|:|| || |||||:||||: ||     :
Db       258 CGGGCGUAUCCAGAAUUCCAAAUUACAUUUUAUAACACGCAAAAUGCCGUGCAUUCGCUU 317

Qy       320 GCTGGAGGTTTGAGAGCATTAGAATTGGAATATCTGATGCTACAAGTTCCCTATGGATCG 379
             || || || ::| || | ::|||| :||||:|:|:||:| : ||| ::|||:| |||:|
Db       318 GCAGGUGGAUUGCGAUCUUUAGAACUGGAAUAUCUGAUGAUGCAAAUUCCCUACGGAUCA 377

Qy       380 CCGACATATGATATAGGTGGGAACTTTGCAGCACATTTGTTCAAAGGCAGGGATTACGTG 439
               ||| :|:|| |:||| ||||| :::||| | ||: :|::||| ||  | |  :| |:
Db       378 UUGACUUAUGACAUAGGCGGGAAUUUUGCAUCGCAUCUGUUCAAGGGACGAGCAUAUGUA 437

Qy       440 CATTGCTGTATGCCCAATCTGGACATACGAGATATAATGAGGCACGAAGGACAAAAGGAC 499
             || :||:| |:|||||| |:|||| : ||||| |: |:| |||||||||| || || |||
Db       438 CACUGCUGCAUGCCCAACCUGGACGUUCGAGACAUCAUGCGGCACGAAGGCCAGAAAGAC 497

Qy       500 TCAATTGAGATGTATTTGTCCAGATTGTCTCGTTCTAACAAGGTAATTCCTGAGTTTCAA 559
                |::||  : :|  : :| ||  :     |       ||   | : ||  | :: |||
Db       498 AGUAUUGAACUAUACCUUUCUAGGCUAGAGAGAGGGGGGAAAACAGUCCCCAACUUCCAA 557

Qy       560 AGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAAGTCTGCTGCTCTAAAACTTTT 619
             | ||| || ::: |||| :| ||||||  :||  | || |    |:|    || ||:::
Db       558 AAGGAAGCAUUUGACAGAUACGCAGAAAUUCCUGAAGACGCUGUCUGUCACAAUACUUUC 617

Qy       620 CAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGAAGATACGCTGTTGCTCTGCAC 679
             |||      |||   || |||    || |    || |||   :| ||  ::|| |: |||
Db       618 CAGACAAUGCGACAUCAGCCGAUGCAGCAAUCAGGCAGAGUGUAUGCCAUUGCGCUACAC 677

Qy       680 AGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCGTTAATATCTAAGAATATACAT 739
             ||  : :|:|| |: || |   |:|||:: || || ||  :  :    || ||: : ||:
Db       678 AGCAUAUAUGACAUACCAGCCGAUGAGUUCGGGGCGGCACUCUUGAGGAAAAAUGUCCAU 737

Qy       740 GTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTACTAGACCAGACGGAGGTTACG 799
                :| :|:|| ||:: |   ::  | ||     :  : |: ||  |  |  | |: |
Db       738 ACGUGCUAUGCCGCUUUCCACUUCUCCGAGAACCUGCUUCUUGAAGAUUCAUACGUCAAU 797

Qy       800 CTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGATGATGTTTCTTTTTTCTTTGCT 859
              :  | ||||:   |||   :::     | || || ||  |  :  | ::::  :::||
Db       798 UUGGACGAAAUCAACGCGUGUUUUUCGCGCGAUGGAGACAAGUUGACCUUUUCUUUUGCA 857

Qy       860 GATGAAAGTACTTTAAATTATAGTCATAAATACAAAAATATCTTGCATTATGTAGTTAAA 919
                || ||:||: : ||::|: |:||:|  :|    ||:|:  :  | :|:|:    |||
Db       858 UCAGAGAGUACUCUUAAUUAUUGUCAUAGUUAUUCUAAUAUUCUUAAGUAUGUGUGCAAA 917

Qy       920 TCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAGGAATTTTTAGTCACTAGGGTT 979
              |::||:: || || :|:| :|||   |:::|| : ||||| :::::||:||| || |::
Db       918 ACUUACUUCCCGGCCUCUAAUAGAGAGGUUUACAUGAAGGAGUUUUUAGUCACCAGAGUU 977

Qy       980 AATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTATATTCTGTACAAGAGTGTTAGA 1039
             ||:|| :||::::|:|| ::: | | | :|||:|| : : ::|:|:||||  |:|:
Db       978 AAUACCUGGUUUUGUAAGUUUUCUAGAAUAGAUACUUUUCUUUUGUACAAAGGUGUGGCC 1037

Qy      1040 CAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATGGAAGACGCCTTTGCTTACAAG 1099
             ||   | |    ||:||:|| |||:: :|:   || |:||||||||| :    ::||||
Db      1038 CAUAAAAGUGUAGAUAGUGAGCAGUUUUAUACUGCAAUGGAAGACGCAUGGCAUUACAAA 1097

Qy      1100 AAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTTAGAGACACGGCTTCGGTTAAC 1159
             || ||  : || |:|: |||||  || |||    :| ::   ||  |  | :| |: ||
Db      1098 AAGACUCUUGCAAUGUGCAACAGCGAGAGAAUCCUCCUUGAGGAUUCAUCAUCAGUCAAU 1157

Qy      1160 TTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCGCTGTTTGAGGGTTCTATTACC 1219
             :  :||:: || || |:|| ||| |:||: |: |:|||  : :: ||   ::|: :
Db      1158 UACUGGUUUCCCAAAAUGAGGGAUAUGGUCAUCGUACCAUUAUUCGACAUUUCUUUGGAG 1217

Qy      1220 AGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGTGACTTCGTTTACACAGTGCTT 1279
             |  |  |||| |||  | |  || |:| : |:       || ::||: :  ||||:||::
Db      1218 ACUAGUAAGAGGACGCGCAAGGAAGUCUUAGUGUCCAAGGAUUUCGUGUUUACAGUGCUU 1277

Qy      1280 AATCATATCAGAACATATCAAGCCAAAGCGTTAACTTACCAGAACGTATTATCTTTCGTG 1339
             || || |:  |||||:| || |||||  : || :||   || |: :: :|  : |:
Db      1278 AACCACAUUCGAACAUACCAGGCGAAAGCUCUUACAUACGCAAAUGUUUUGUCCCUUGUC 1337

Qy      1340 GAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACTGCTAGGTCTGAATGGGATGTA 1399
             || :| |:  ||:|  | |: |: |: || ||:|: || || |||:| |||:||||:|:
Db      1338 GAAUCGAUUCGAUCGAGGGUAAUCAUUAACGGUGUGACAGCGAGGUCCGAAUGGGAUGUG 1397

Qy      1400 GATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTCTTGCAGACTAAGCTGGCTGCG 1459
             || |||  | :  : ||| ||::|:| |:||| :: : | :||| ||:||||: || |
Db      1398 GACAAAUCUUUGUUACAAUCCUUGUCCAUGACGUUUUACCUGCAUACUAAGCUUGCCGUU 1457

Qy      1460 CTTCAAGACGATATAGTAATGGGAAAGTTTCGGTGCTTGGATAAGACCACTTCTGAACTT 1519
             |:  | || ||  :| : |:  | |||::: |   |      || ||    :   | | :
Db      1458 CUAAAGGAUGACUUACUGAUUAGCAAGUUUAGUCUCGGUUCGAAAACGGUGUGCCAGCAU 1517

Qy      1520 ATTTGGGATGAGGTGGGCAAATTTTTTGGAAACGTTTTCCCCACTATCAAAGAGAGATTG 1579
              : :||||:||| :          :::|| ||||  :: ||| |  : ||||||||| :
Db      1518 GUGUGGGAUGAGAUUUCGCUGGCGUUUGGGAACGCAUUUCCCUCCGUGAAAGAGAGACUC 1577

Qy      1580 GTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTGAAGATCAAGATCCCAGATCTG 1639
              :|| ||||||| :: :    |:    |   | ||  :  |||:|| | : || ||:|:
Db      1578 UUGAACAGGAAACUUAUCAGAGUGGCAGGCGACGCAUUAGAGAUCAGGGUGCCUGAUCUA 1637

Qy      1640 TATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACCAAGTCTGAGGAGTTACCGCAT 1699
             :|:|: || :   | ||||| :: |:  |:|| :|||     :|:| |||  : ||
Db      1638 UAUGUGACCUUCCACGACAGAUUAGUGACUGAGUACAAGGCCUCUGUGGACAUGCCUGCG 1697

Qy      1700 CTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATGTACGACGCGTTATCAGAATTA 1759
             |: || |: | |||| |  : |||||| | ||    |:|:|| | ||  : :|||| ::|
Db      1698 CUUGACAUUAGGAAGAAGAUGGAAGAAACGGAAGUGAUGUACAAUGCACUUUCAGAGUUA 1757

Qy      1760 TCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAGTTCAAAGACATGTGCAAGGCT 1819
             :|  :  : | ||   |:|| || ::|||: : |     ::     | |:|:|| |  |:
Db      1758 UCGGUGUUAAGGGAGUCUGACAAAUUCGAUGUUGAUGUUUUUUCCCAGAUGUGCCAAUCU 1817

Qy      1820 TTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTTGCAGTGGCCGAGAATAGAAGC 1879
             :: || |::   ||      ||||||    |: |: |: || |:       ||:   |||
Db      1818 UUGGAAGUUGACCCAAUGACGGCAGCGAAGGUUAUAGUCGCGGUCAUGAGCAAUGAGAGC 1877

Qy      1880 GGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAATGTGGCTAAGGCTCT------T 1933
             ||: : ||:|: || :::||    || || |||| |||:|: ||    ||: :      :
Db      1878 GGUCUGACUCUCACAUUUGAACGACCUACUGAGGCGAAUGUUGCGCUAGCUUUACAGGAU 1937

Qy      1934 AAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCGACATCCGAAGAGGTGAACGTA 1993
              ||   | ||| :| || |  |   :     ::    | | |   |  || |
Db      1938 CAAGAGAAGGCUUCAGAAGGUGCAUUGGUAGUUACCUCAAGAGAAGUUGAAGAACCGUCC 1997

Qy      1994 AATAAATTTTCTATTGCTGAGAAAGGGAGATTGCCTGTGTGTGCAGAAAGTCATGGTTTG 2053
             |  ||   ::| |: ||      || |  |      |   |:   |   |  |:  :  |
Db      1998 AUGAAGGGUUCGAUGGCCAGAGGAGAGUUACAAUUAGCUGGUCUUGCUGGAGAUCAUCCG 2057

Qy      2054 ACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTCAACGATTTCCATAAGGCTTGC 2113
               |    |  | :   || || ||||| : |||:|  :  |  | :: ||:| |||
Db      2058 GAGUCGUCCUAUUCUAAGAACGAGGAGAUAGAGUCUUUAGAGCAGUUUCAUAUGGCGACG 2117

Qy      2114 GTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTCTACACTGGCTCACTCAAAGTT 2173
             |  ||:    : |::   ||||| |:|   :|| ::|: :|||| ||  |  : ||||::
Db      2118 GCAGAUUCGUUAAUUCGUAAGCAGAUGAGCUCGAUUGUGUACACGGGUCCGAUUAAAGUU 2177
```

```
Qy       2174 CAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCGTTGTCCGCCACTGTATCAAAT 2233
              || ||||:||| |||: : : || ||  :|| |||  :|   : :| ||   | |: :| ||:
Db       2178 CAGCAAAUGAAAAACUUUAUCGAUAGCCUGGUAGCAUCACUAUCUGCUGCGGUGUCGAAU 2237

Qy       2234 CTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCTGATTCCAGGGAGAAAGTTGGT 2293
              |:    ||||   |: || ||:   ||   |     :||    :||   || |  | ||  ::||
Db       2238 CUCGUCAAGAUCCUCAAAGAUACAGCUGCUAUUGACCUUGAAACCCGUCAAAAGUUUGGA 2297

Qy       2294 GTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCTGCGGCCAAAGGTCATTCATGG 2353
              |: :  |||:|:   | :   |   |||:|| :   :||||||  |||||||   |:||: ||:||
Db       2298 GUCUUGGAUGUUGCAUCUAGGAAGUGGUUAAUCAAACCAACGGCCAAGAGUCAUGCAUGG 2357

Qy       2354 GGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCACTTCTATCTTATGAAGGAGAT 2413
              || |::|:          ||  | ||||         :   || |:: :     :|:|| |   |
Db       2358 GGUGUUGUUGAAACCCACGCGAGGAAGUAUCAUGUGGCGCUUUUGGAAUAUGAUGAGCAG 2417

Qy       2414 AGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTATCATCTGATACAATGGTATAT 2473
               |  :||:|||        || :|||| || |: ||:|:     :|:||   |  : |: :|:
Db       2418 GGUGUGGUGACAUGCGAUGAUUGGAGAAGAGUAGCUGUUAGCUCUGAGUCUGUUGUUUAU 2477

Qy       2474 TCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATGAGAGACGGTGAACCCCACGAA 2533
              :| || |: || || |:|  || :|:| | | |     :   || |||| ||||| || |
Db       2478 UCCGACAUGGCGAAACUCAGAACUCUGCGCAGACUGCUUCGAAACGGAGAACCGCAUGUC 2537

Qy       2534 CCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGTTGTGGAAAGTACAAAGGAGAT 2593
                :|  |||||| : |: |::|:||| || |: || || :|:|||||    ||||| |   :
Db       2538 AGUAGCGCAAAGGUUGUUCUUGUGGACGGAGUUCCGGGCUGUGGAAAAACCAAAGAAAUU 2597

Qy       2594 TTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTTCCTGGAAAACAAGCTGCTGCT 2653
               ::    ||  :: |: ::||:|| ||: : |: :: |: ||:|| || ||||| || |
Db       2598 CUUUCCAGGGUUAAUUUUGAUGAAGAUCUAAUUUUAGUACCUGGGAAGCAAGCCGCGGAA 2657

Qy       2654 ATGATCAGAAGAAGGCTAATTCATCTGGACTGATAAGAGCCACAATGGACAATGTGAGA 2713
              |:||:||||||| | || ||::| :| ||  : |:     ||||| | |||||| |: | |
Db       2658 AUGAUCAGAAGACGUGCGAAUUCCUCAGGGAUUAUUGUGGCCACGAAGGACAACGUUAAA 2717

Qy       2714 ACGGTAGATTCACTTCTAATGCAT---------CCAAAACCGCGATCACACAAGAGGCTT 2764
              || |: ||::|  :  : |:| |:          | ||   |      ||||||| :
Db       2718 ACCGUUGAUUCUUUCAUGAUGAAUUUUGGGAAAAGCACACGCUGUCAGUUCAAGAGGUUA 2777

Qy       2765 TTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTTAACTTCCTGGTGCTTATCTCT 2824
              ::  |::||:|||||||::||:| :||| || ||::|:|::|| :: |: |:|    |: :|
Db       2778 UUCAUUGAUGAAGGGUUGAUGUUGCAUACUGGUUGUGUUAAUUUUCUUGUGGCGAUGUCA 2837

Qy       2825 GGTTGCGACATCGCATACATTTACGGAGATACACAGCAGATTCCTTTCATTAACAGAGTT 2884
                 :|||| |: |||:|   :::||||||| ||||||||||::|| : ||: || ||||::
Db       2838 UUGUGCGAAAUUGCAUAUGUUUACGGAGACACACAGCAGAUUCCAUACAUCAAUAGAGUU 2897

Qy       2885 CAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAAGTGGATGAAGTTGAGATGAGG 2944
                    ::||||:| |||    ||::::|  ||   :| |||: || || |: ||||    |
Db       2898 UCAGGAUUCCCGUACCCCGCCCAUUUUGCCAAAUUGGAAGUUGACGAGGUGGAGACACGC 2957

Qy       2945 AGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTCCTACAATCGAAGTACGAAGGA 3004
              || || || |:  | :| ||||  ||:|:|      ::  |:   |   || :| || ||
Db       2958 AGAACUACUCUCCGUUGUCCAGCCGAUGUCACACAUUAUCUGAACAGGAGAUAUGAGGGC 3017

Qy       3005 GCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCATCTGAGATGATAGGCGGTAAG 3064
                  |: |  | |||::|  | |:  ||   :| |: :|     ||||:| : |||||
Db       3018 UUUGUCAUGAGCACUUCUUCGGUUAAAAAGUCUGUUUCGCAGGAGAUGGUCGGCGGAGCC 3077

Qy       3065 GGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGGAAAATTGTAACTTTCACTCAGGCT 3124
               |  |:  : ||      : :| |||||  :  | || || |:  : ||::: || ||   |
Db       3078 GCCGUGAUCAAUCCGAUCUCAAAACCCUUGCAUGGCAAGAUCCUGACUUUUACCCAAUCG 3137

Qy       3125 GATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTGAACACCGTTCATGAGATCCAA 3184
              ||:|||   |   :        |  || :|:    |:|:  |||| |: ||:||   : |||
Db       3138 GAUAAAGAAGCUCUGCUUUCAAGAGGGUAUUCAGAUGUUCACACUGUGCAUGAAGUGCAA 3197

Qy       3185 GGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACGGCAACTCCACTGACTCTGATT 3244
              || || || :      ||:|: :| |: |: || ::  ||   | || ||| :   |  : |::
Db       3198 GGCGAGACAUACUCUGAUGUUUCACUAGUUAGGUUAACCCCUACACCAGUCUCCAUCAUU 3257

Qy       3245 TCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGACACACAAAGAGCTTCAAATAT 3304
               |         ||| ||:|:: : |:|||  :| | || |||||           :||| :|
Db       3258 GCAGGAGACAGCCCACAUGUUUUGGUCGCAUUGUCAAGGCACACCUGUUCGCUCAAGUAC 3317

Qy       3305 TACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGTGATTTGTCTTCTTTAAGCTCC 3364
              :|||| |: |:  : ||:||:::||:      |: |::|| ||: :          : |||:|
Db       3318 UACACUGUUGUUAUGGAUCCUUUAGUUAGUAUCAUUAGAGAUCUAGAGAAACUUAGCUCG 3377

Qy       3365 TTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGATAGCAATTACAGATGGATGCA 3424
              :  |  :  ::||| |:|:|:| ||: || ||||| |     |:|||||::|||||: ||  |
Db       3378 UACUUGUUAGAUAUGUAUAAGGUCGAUGCAGGAACACAAUAGCAAUUACAGAUUGACUCG 3437

Qy       3425 GTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAATCAGGAGACTTTCCAGATCTA 3484
              |:|::||||||:   ||:|: :::|: ||| | || ||  | || ||  :: | ||: :
Db       3438 GUGUUCAAAGGUUCCAAUCUUUUUGUUGCAGCGCCAAAGACUGGUGAUAUUUCUGAUAUG 3497

Qy       3485 CAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACTATACTTAACAAGTATGATGCT 3544
              |||:: :| :| ||:    :| |:||| || || || || |:   : || || : :||:||:
Db       3498 CAGUUUUACUAUGAUAAGUGUCUCCCAGGCAACAGCACCAUGAUGAAUAAUUUUGAUGCU 3557

Qy       3545 GTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAGGATTGTGTTCTTGATTTTTCC 3604
              |::||||:||||::    :|| | :     : ||:|: || ||::|   :   : ||: : :|
Db       3558 GUUACCAUGAGGUUGACUGACAUUUCAUUGAAUGUCAAAGAUUGCAUAUUGGAUAUGUCU 3617

Qy       3605 AAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTAGAGCCAGTTTTGCGTACCGCG 3664
              ||   : ::|    ||| |||||     |    |    |:|   ||  :  : || || |||
Db       3618 AAGUCUGUUCGUGCGCCUAAGGAUCAAAUCAAACCACUAAUACCUAUGGUACGAACGGCG 3677

Qy       3665 GCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTGGTTGCAATGATTAAAAGAAAT 3724
              || |||  |||| |      | ||||:| : |||||: : |: || |:||::||||||||
Db       3678 GCAGAAAUGCCACGCCAGACUGGACUAUUGGAAAAUUUAGUGGCGAUGAUUAAAAGAAAC 3737

Qy       3725 TTCAACGCACCAGACCTGACGGGGACGATTGACATTGAGAGCACCGCATCTGTTGTAGTA 3784
              :: |||||||| ||  :| | || |  |::|| |::|| |   || |||:|: : |: |:|
Db       3738 UUUAACGCACCCGAGUUGUCUGGCAUCAUUGAUAUUGAAAAUACUGCAUCUUUGGUUGUA 3797

Qy       3785 GATAAGTTTTTTGATAGCTATTTATTAAAAAAGAAAAATACACAAAAAATATTGCTGGA 3844
              ||:|||::::::||:|| :|:::  ::||| || ||| | |  |||| || | :| :
Db       3798 GAUAAGUUUUUUGAUAGUUAUUUGCUUAAAGAAAAAAGAAAACCAAAUAAAAAUGUUUCU 3857

Qy       3845 GTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAACAGGAAAGAAGTACTATTGGAC 3904
                :| : |  |  || :|  : |  |||:||:: |||||    | || | |:|  | : | |
Db       3858 UUGUUCAGUAGAGAGUCUCUCAAUAGAUGGUUAGAAAAGCAGGAACAGGUAACAAUAGGC 3917

Qy       3905 GACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATCGATCAGTACAAGCACATGATC 3964
                |  : ||  | :   |::::    ||: :||| ||   : ||:|||:|||  ||||:||:
Db       3918 CAGCUCGCAGAUUUUGAUUUUGUGGAUUUGCCAGCAGUUGAUCAGUACAGACACAUGAUU 3977

Qy       3965 AAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAGAATGAATACCCTGCTCTGCAA 4024
              || || ||||| ||||| || ::||||   ::|||: || |  || :|||| ||: :|||
Db       3978 AAAGCACAACCCAAACAAAAGUUGGACACUUCAAUCCAAACGGAGUACCCGGCUUUGCAG 4037

Qy       4025 ACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTGGCCGGTTTCTCA---GAGCTT 4081
              || |::|: :||||::| ||  |||:||| | |: :: | |   :: :      ||||::
Db       4038 ACGAUUGUGUACCAUUCAAAAAAGAUCAAUGCAAUAUUCGGCCCGUUGUUUAGUGAGCUU 4097

Qy       4082 ACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTTCTTTTCTTTACTAGGAAAACT 4141
              || |||     :|: ||      ::||::| |  |  ::: : :: :: || || || ||
Db       4098 ACUAGGCAAUUACUGGACAGUGUUGAUUCGAGCAGAUUUUUGUUUUUCACAAGAAAGACA 4157

Qy       4142 CCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCGCACGTTCCTATGGATGTGTTA 4201
              ||||  ||||:: | || :: ::|    ||:|:||||    || |: || |:|||:|: ::
Db       4158 CCAGCGCAGAUUGAGGAUUUCUUCGGAGAUCUCGACAGUCAUGUGCCGAUGGAUGUCUUG 4217

Qy       4202 GAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAGTTTCATTGTGCTGTAGAGTAT 4261
              || |:|||:|: :| || :| || || :| ||||| || :: || :|:|| |:||| :|
Db       4218 GAGCUGGAUAUAUCAAAAUACGACAAAUCUCAGAAUGAAUUCCACUGUGCAGUAGAAUAC 4277

Qy       4262 GAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCCGAAGTGTGGAAACAAGGCAC 4321
              || |: :||   ||||::|||: :   | || :: ::||  ||||: :||||||||||||||
Db       4278 GAGAUCUGGCGAAGAUUGGGUUUUGAAGACUUCUUGGGAGAAGUUUGGAAACAAGGCAU 4337

Qy       4322 AGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAGACATGTCTGTGGTATCAAAGG 4381
```

```
               || || || ||  : |||||::| |  || || |: || || :|  : :||:|:|||||
Db        4338 AGAAAGACCACCCUCAAGGAUUAUACCGCAGGUAUAAAAACUUGCAUCUGGUAUCAAAGA 4397

Qy        4382 AAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTTATAATAGCAGCTTGCTTGGGT 4441
               || ||||| || |: || || ::||: || || ||:|: |: |: || || :| ::||
Db        4398 AAGAGCGGGGACGUCACGACGUUCAUUGGAAACACUGUGAUCAUUGCUGCAUGUUUGGCC 4457

Qy        4442 TCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTTTGTGGAGACGATTCCGTTTTG 4501
               :| |:| : ||||:||| ||  : |: ||||| || ::::| || |||||:    :  :|
Db        4458 UCGAUGCUUCCGAUGGAGAAAAUAAUCAAAGGAGCCUUUUGCGGUGACGAUAGUCUGCUG 4517

Qy        4502 TATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCATGTGCTAATCTCATGTGGAAT 4561
               :| :::||||||||::  || :: || ||  : ||    :  || ||:|: |:|:||||:
Db        4518 UACUUUCCAAAGGGUUGUGAGUUUCCGGAUGUGCAACACUCCGCGAAUCUUAUGUGGAAU 4577

Qy        4562 TTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTTTGTGGTAGATACATCATACAC 4621
               :::|| || ||||:|: :| |||   |:| || :||::::| || |||:|  : |:|||
Db        4578 UUUGAAGCAAAACUGUUUAAAAAACAGUAUGGAUACUUUUGCGGAAGAUAUGUAAUACAU 4637

Qy        4622 CATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAGTTGATCTCCAAACTTGGGGCA 4681
               || || |  |||   |: |:|:|::| ||:||  : |||::||:|:| ||||::|| ||
Db        4638 CACGACAGAGGAUGCAUUGUGUAUUACGAUCCCCUAAAGUUGAUCUCGAAACUUGGUGCU 4697

Qy        4682 AAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGGGTGTCTTTGTGCGATGTTGCT 4741
               ||||| |:||||||::  || |||:: || |||:: ||   |:|: : :| ||:|::||:
Db        4698 AAACACAUCAAGGAUUGGGAACACUUGGAGGAGUUCAGAAGGUCUCUUUGUGAUGUUGCU 4757

Qy        4742 TGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTGAACGCAGCTATCAAGGAGGTT 4801
                 ::|| :    |||   :|       :   | ||| :| |||  ||: :   |||||::
Db        4758 GUUUCGUU---GAACAAUUGUGCGUAUUACACACAGUUGGACGACGCUGUAUGGGAGGUU 4814

Qy        4802 CATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGTGTTAACAAATTTTTGTGTGAT 4861
               ||:|| |||||   :   ||::||:::| :: :||  |: :    || : :::|: :||:
Db        4815 CAUAAGACCGCCCCUCCAGGUUCGUUUGUUUAUAAAAGUCUGGUGAAGUAUUUGUCUGAU 4874

Qy        4862 AAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAGTCTCAGAGATACTGTCAAAAT 4921
               ||| :: : :::|||| :::|::: :| |:|||: :   : : | ||  |  |: || |:
Db        4875 AAAGUUCUUUUUAGAAGUUUGUUUAUAGAUGGCUCUAGUUGUUAAAGGAAAAGUGAAUAU 4934

Qy        4922 TAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACTTCCGGCATTCATGACTAAGGT 4981
                |  |||:: |: || |: :| |||  |||  |||:  : ||| |  :  : ||    |:
Db        4935 CAAUGAGUUUAUCGACCUGUCAAAAAUGGAGAAGAUCUUACCGUCGAUGUUUACCCCUGU 4994

Qy        4982 CAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGCTGTTAAGAATGATAGTCTTTC 5041
                |||||:|::|     :| |  |: || || |: |:|| :  : ||||:||     : :|
Db        4995 AAAGAGUGUUAUGUGUUCCAAAGUUGAUAAAAUAAUGGUUCAUGAGAAUGAGUCAUUGUC 5054

Qy        5042 TGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAAAGGGTATGTGTGCTTAGCTGA 5101
                || |:  |  : |::||||| |::||| :  :: | |  || :| |: :| ::||| |
Db        5055 AGAGGUGAACCUUCUUAAAGGAGUUAAGCUUAUUGAUAGUGGAUACGUCUGUUUAGCCGG 5114

Qy        5102 TTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTGCCGTGGTGGTGTCAGTGTTTG 5161
               :::||: |:  | || |||:||| :  ||  || || :|| | || ||:|: || |: :|
Db        5115 UUUGGUCGUCACGGGCGAGUGGAACUUGCCUGACAAUUGCAGAGGAGGUGUGAGCGUGUG 5174

Qy        5162 TATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAACGCTGGGTGCGTATCACGCCCC 5221
               : : |: || || || |:| ||||     | || || || |: ||  | :|  || |  |
Db        5175 UCUGGUGGACAAAAGGAUGGAAAGAGCCGACGAGGCCACUCUCGGAUCUUACUACACAGC 5234

Qy        5222 TGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAATTATTCAATAACATCCGAGGA 5281
                ||:   || || |  :::   :: ||| :  : || ||::|: | |:|||  || ||||
Db        5235 AGCUGCAAAGAAAAGAUUUCAGUUCAAGGUCGUUCCCAAUUAUGCUAUAACCACCCAGGA 5294

Qy        5282 TGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAAAGGAGTGGCTATGGAAGAAGG 5341
                ||   |||  ||   :||||||: ::||: ||:|: | |   |:|   |:|  ||  ||
Db        5295 CGCGAUGAAAAACGUCUGGCAAGUUUUAGUUAAUAUUAGAAAUGUGAAGAUGUCAGCGGG 5354

Qy        5342 ATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGTAGTACATAAAAATAATGTAAG 5401
                : |:|:||  : :|: :||||:: |: :|  : :|: : |:  |:| |||:||: :||
Db        5355 UUUCUGUCCGCUUUCUCUGGAGUUUGUGUCGGUGUGUAUUGUUUAUAGAAAUAAUAUAAA 5414

Qy        5402 AAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGGCTCGCCAATTGAACTCACTGA 5461
               |  |||:::||| ||    |::   |  |:|| ||||||   ||| |: ||||: || ||
Db        5415 AUUAGGUUUGAGAGAGAAGAUUACAAACGUGAGAGACGGAGGGCCCAUGGAACUUACAGA 5474

Qy        5462 AAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGCTGTGAAACTCGAAAAGGTTC- 5520
               | | |: |::|| |||::| :||| || |: || |:| |  : |  |: | |||| ::|
Db        5475 AGAAGUCGUUGAUGAGUUCAUGGAAGAUGUCCCUAUGUCGAUCAGGCUUGCAAAGUUUCG 5534

Qy        5521 -----------CGGAAAACAAAAAAGAAATGGTAGGTAATAATGTTAATAAT-------- 5561
                             |||| |   | |       ||| || ||:  :| :||:
Db        5535 AUCUCGAACCGGAAAAAAGAGUGAUGUCCGCAAAGGAAAAAAUAGUAGUAAUGAUCGGUC 5594

Qy        5562 -------AAGAAAATAAATAACAGTGGTAAGAAGGGTTTTAAAATTGAGGAAATTGAGGA 5614
                      || || |   |:|  | :| :||| |   :     ||:       |   || |
Db        5595 AGUGCCGAACAAGAACUAUAGAAAUGUUAAGGAUUUUGGAGGAAUGAGUUUUAAAAAGAA 5654

Qy        5615 TAATGTAAGTGATGACGAGT---------CTATCGCGTCATCGAGTACGTTTTAATCAAT 5665
               :||: :||  ||:|| || :         |: :|||   |:||  : ||::::|   ||:
Db        5655 UAAUUUAAUCGAUGAUGAUUCGGAGGCUACUGUCGCCGAAUCGGAUUCGUUUUA---AAU 5711

Qy        5666 ATGCCTTATACAATCAACTCTCCGAGCCAATTTGTTTACTTATCTTCCGCTTACGCAGAT 5725
               |:| |::| |  |:||   |:||    || :: |: : |:: :| :| || :  || ||
Db        5712 AUGUCUUACAGUAUCACUACUCCAUCUCAGUUCGUGUUCUUGUCAUCAGCGUGGGCCGAC 5771

Qy        5726 CCTGTGCAGCTGATCAATCTGTGTACAAATGCATTGGGTAACCAGTTTCAAACGCAACAA 5785
               ||  :  || : |: ||: : :|:|| ||:|| :: || || |||:::||||| ||||||
Db        5772 CCAAUAGAGUUAAUUAAUUUAUGUACUAAUGCCUUAGGAAAUCAGUUUCAAACACAACAA 5831

Qy        5786 GCTAGGACAACAGTCCAACAGCAATTTGCGGATGCCTGGAAACCTGTGCCTAGTATGACA 5845
               ||: | ||    |: |||   |||::    || |  :|||||||:   ||     : ||
Db        5832 GCUCGAACUGUCGUUCAAAGACAAUUCAGUGAGGUGUGGAAACCUUCACCACAAGUAACU 5891

Qy        5846 GTGAGATTTCCTGCATCGGATTTCTATGTGTATAGATATAATTCGACGCTTGATCCGTTG 5905
               |: || :: ||:|     || ::  | |:|:| || :| ||: ||    : || ||| :
Db        5892 GUUAGGUUCCCUGACAGUGACUUUAAGGUGUACAGGUACAAUGCGGUAUUAGACCCGCUA 5951

Qy        5906 ATCACGGCGTTATTAAATAGCTTTGATACTAGAAATAGAATAATAGAGGTTGATAATCAA 5965
                :||| ||  : ::|  :   :: || ||:|||||:||||:||:||| |::|| ||:||
Db        5952 GUCACAGCACUGUUAGGUGCAUUCGACACUAGAAAUAGAAUAAUAGAAGUUGAAAAUCAG 6011

Qy        5966 CCCGCACCGAATACTACTGAAATCGTTAACGCGACTCAGAGGGTAGACGATGCTACTGTA 6025
                |    || |  ||: | || |   :  | || ||:|  || |:|||||| || || |:
Db        6012 GCGAACCCCACGACUGCCGAGACGUUAGAUGCUACUCGUAGAGUAGACGACGCAACGGUG 6071

Qy        6026 GCTATAAGGGCTTCAATCAATAATTTGGCTAATGAACTGGTTCGTGGAACTGGCATGTTC 6085
               || |:||||    | |: ||:||:::       ||| :| :  | ||||| ||    :
Db        6072 GCCAUAAGGAGCGCGAUAAAUAAUUUAAUAGUAGAAUUGAUCAGAGGAACCGGAUCUUAU 6131

Qy        6086 AATCAAGCAGGCTTTGAGACTGCTAGTGGACTTGTCTGGACCACAACTCCGGCTACTTAG 6145
               ||:|        :: ||||   |:  :||  : |: :||||| |   :|| || ||:
Db        6132 AAUCGGAGCUCUUUCGAGAGCUCUUCUGGUUUGGUUUGGACCUCUGGUCCUGCAACU--- 6188

Qy        6146 CTATTGTTGTGAGATTTCCTAAAATAAAGTCGCTGAAGACTTAAAATTCAGGGTGGCTGA 6205
                :   |: |: |   : | :|| | | |   | :   | |   ||   ||  |:||
Db        6189 -UGAGGUAGUCAAGAUGCAUAAUAAAUAACGGAUUGUGUCCGUAAUCACA-CGUGGUGCG 6246

Qy        6206 TACCAAAATCAGCAGTGGTTGTTCGTCCACTTAAATATAACGATTGTCATATCTGGATCC 6265
               :|| | ||     ||:| :: : | :||||::|||:  || | ::|:  : :  |    |
Db        6247 UACGAUAACGCAUAGUGUUUUUCCCUCCACUUAAAUCGAAGGGUUGU-GUCUUGGAUCGC 6305

Qy        6266 AACAGTTAAACCATGTGATGGTGTATACTGTGGTATGGCGTAAAACATCGGAGAGGTTCG 6325
                   |: |||             :|:||    | | |     ||  |   ||| ||::||
Db        6306 GCGGGUCAAAUGUAUAUGGUUCAUAUACAUCCGCAGGCACGUAAUAAAGCGAGGGGUUCG 6365

Qy        6326 AATCCTCCCCTAACCGCCGGTAGCGGCCCA 6355
               ||:|| ||| : ||| ||||:|| ||||||
Db        6366 AAUCCCCCCGUUACCCCCGGUAGGGGCCCA 6395

RESULT 2
US-09-037-751-1
; Sequence 1, Application US/09037751
; Patent No. 6037456
;  GENERAL INFORMATION:
;    APPLICANT:  GARGER, STEPHEN
```

```
;    APPLICANT:  HOLTZ, R. BARRY
;    APPLICANT:  McCULLOCH, MICHAEL
;    APPLICANT:  TURPEN, THOMAS
;    TITLE OF INVENTION:  A PROCESS FOR ISOLATING AND
;    TITLE OF INVENTION:  PURIFYING VIRUSES SOLUBLE PROTEINS AND PEPTIDES
;    TITLE OF INVENTION:  FROM PLANT SOURCES
;    NUMBER OF SEQUENCES:  5
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  Howrey & Simon
;      STREET:  1299 Pennsylvania Avenue N.W.
;      CITY:  Washington
;      STATE:  DC
;      COUNTRY:  USA
;      ZIP:  20004
;    COMPUTER READABLE FORM:
;      MEDIUM TYPE:  Diskette
;      COMPUTER:  IBM Compatible
;      OPERATING SYSTEM:  DOS
;      SOFTWARE:  FastSEQ for Windows Version 2.0
;    CURRENT APPLICATION DATA:
;      APPLICATION NUMBER:  US/09/037,751
;      FILING DATE:  10-MAR-1998
;      CLASSIFICATION:
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:
;      FILING DATE:
;    ATTORNEY/AGENT INFORMATION:
;      NAME:  Halluin, Albert P
;      REGISTRATION NUMBER:  25,277
;      REFERENCE/DOCKET NUMBER:  00801.0140.999
;    TELECOMMUNICATION INFORMATION:
;      TELEPHONE:  650-463-8109
;      TELEFAX:  650-463-8400
;      TELEX:
;  INFORMATION FOR SEQ ID NO:  1:
;    SEQUENCE CHARACTERISTICS:
;      LENGTH:  6395 base pairs
;      TYPE:  nucleic acid
;      STRANDEDNESS:  single
;      TOPOLOGY:  unknown
;    MOLECULE TYPE:  Genomic RNA
US-09-037-751-1

  Query Match             38.8%;  Score 2468;  DB 3;  Length 6395;
  Best Local Similarity   44.6%;  Pred. No. 0;
  Matches 2851;  Conservative 1173;  Mismatches 2300;  Indels   66;  Gaps   11;

Qy          20 ACAACAACAATTAAAACAAAAACAACATATTACAAACAACAAACAACAACAATGGCACAC 79
               || |  |  |  |||  | ||||||||:   |   || |   ||||  ||||:|||| ||
Db          18 ACCAACAACAACAAACAACAAACAACAUUACAAUUACUAUUUACAAUUACAAUGGCAUAC 77

Qy          80 ATACAATCTATAATTAGCAACGCCCTTCTTGAAAGCGTGAGTGGTAAAAACACTCTCGTT 139
               | |||  |    |  |     ||  : |: || |  |:  | || ||| |    |: |:
Db          78 ACACAGACAGCUACCACAUCAGCUUUGCUGGACACUGUCCGAGGAAACAACUCCUUGGUC 137

Qy         140 AATGACCTTGCAAGAAGGCGCATGTACGATACGGCCGTGGAAGAATTTAACGCCCGCGAC 199
               ||:|| |: ||||   | ||  : :|||| || || |: ||||| :::||||| || |||
Db         138 AAUGAUCUAGCAAAGCGUCGUCUUUACGACACAGCGGUUGAAGAGUUUAACGCUCGUGAC 197

Qy         200 CGTAGACCAAAGGTCAACTTTTCCAAAACTATTAGCGAAGAGCAAACGCTTCTAGTCTCC 259
               || || || ||||: |||::::| |||   |: ||||| ||||| ||||:: : |   ||
Db         198 CGCAGGCCCAAGGUGAACUUUUCAAAAGUAAUAAGCGAGGAGCAGACGCUUAUUGCUACC 257

Qy         260 AACGCGTACCCGGAGTTCCAGATTACCTTTTATAATACTCAAAATGCCGTACACAGTTTG 319
                  |||:| || || ::||| |::|| ::::|:|| || |||||:||||: ||      :
Db         258 CGGGCGUAUCCAGAAUUCCAAAUUACAUUUUAUAACACGCAAAAUGCCGUGCAUUCGCUU 317

Qy         320 GCTGGAGGTTTGAGAGCATTAGAATTGGAATATCTGATGCTACAAGTTCCCTATGGATCG 379
               || || || ::| || | ::|||| :||||:|:|:||:| : ||| ::|||:| |||:|
Db         318 GCAGGUGGAUUGCGAUCUUUAGAACUGGAAUAUCUGAUGAUGCAAAUUCCCUACGGAUCA 377

Qy         380 CCGACATATGATATAGGTGGGAACTTTGCAGCACATTTGTTCAAAGGCAGGGATTACGTG 439
                 ||| :|:|| |:||| ||||| :::||| | ||: :|::||| || |  |  :| |:
Db         378 UUGACUUAUGACAUAGGCGGGAAUUUUGCAUCGCAUCUGUUCAAGGGACGAGCAUAUGUA 437

Qy         440 CATTGCTGTATGCCCAATCTGGACATACGAGATATAATGAGGCACGAAGGACAAAAGGAC 499
               || :||:| |:|||||| |:|||| : ||||| |: |:| |||||||||| || || |||
Db         438 CACUGCUGCAUGCCCAACCUGGACGUUCGAGACAUCAUGCGGCACGAAGGCCAGAAAGAC 497

Qy         500 TCAATTGAGATGTATTTGTCCAGATTGTCTCGTTCTAACAAGGTAATTCCTGAGTTTCAA 559
                  |::||  : :|  : :| ||  :      |       ||   | : ||  | :: |||
Db         498 AGUAUUGAACUAUACCUUUCUAGGCUAGAGAGAGGGGGGAAAACAGUCCCCAACUUCCAA 557

Qy         560 AGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAAGTCTGCTGCTCTAAAACTTTT 619
               | ||| || ::: |||| :| ||||||  :||  | || |    |:|    || ||:::
Db         558 AAGGAAGCAUUUGACAGAUACGCAGAAAUUCCUGAAGACGCUGUCUGUCACAAUACUUUC 617

Qy         620 CAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGAAGATACGCTGTTGCTCTGCAC 679
               |||      |||   || |||    || |    || |||   :| ||  ::|| |: |||
Db         618 CAGACAAUGCGACAUCAGCCGAUGCAGCAAUCAGGCAGAGUGUAUGCCAUUGCGCUACAC 677

Qy         680 AGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCGTTAATATCTAAGAATATACAT 739
               ||  : :|:|| |: || |   |:|||:: || || ||  :  :    || ||: : ||:
Db         678 AGCAUAUAUGACAUACCAGCCGAUGAGUUCGGGGCGGCACUCUUGAGGAAAAAUGUCCAU 737

Qy         740 GTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTACTAGACCAGACGGAGGTTACG 799
                  :| :|:|| ||::  |  ::  | ||     : :  |: ||  |  |  | |: |
Db         738 ACGUGCUAUGCCGCUUUCCACUUCUCCGAGAACCUGCUUCUUGAAGAUUCAUACGUCAAU 797

Qy         800 CTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGATGATGTTTCTTTTTTCTTTGCT 859
                :  | ||||:   |||   :::     | || || ||  |  :  | ::::  :::||
Db         798 UUGGACGAAAUCAACGCGUGUUUUUCGCGCGAUGGAGACAAGUUGACCUUUUCUUUUGCA 857

Qy         860 GATGAAAGTACTTTAAATTATAGTCATAAATACAAAAATATCTTGCATTATGTAGTTAAA 919
                  || ||:||: : ||::|: |:||:|  :|    ||:|:  :  | :|:|:    |||
Db         858 UCAGAGAGUACUCUUAAUUAUUGUCAUAGUUAUUCUAAUAUUCUUAAGUAUGUGUGCAAA 917

Qy         920 TCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAGGAATTTTTAGTCACTAGGGTT 979
                |::||:: || || :|:| :|||   |:::|| : ||||| :::::||:||| || |::
Db         918 ACUUACUUCCCGGCCUCUAAUAGAGAGGUUUACAUGAAGGAGUUUUUAGUCACCAGAGUU 977

Qy         980 AATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTATATTCTGTACAAGAGTGTTAGA 1039
               ||:|| :||::::|:|| ::: | | | :|||:|| : : :: :|:||||  |:|:
Db         978 AAUACCUGGUUUUGUAAGUUUUCUAGAAUAGAUACUUUUCUUUUGUACAAAGGUGUGGCC 1037

Qy        1040 CAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATGGAAGACGCCTTTGCTTACAAG 1099
               ||   | |    ||:||:|| |||:: :|:   || |:||||||||| :    ::||||
Db        1038 CAUAAAAGUGUAGAUAGUGAGCAGUUUUAUACUGCAAUGGAAGACGCAUGGCAUUACAAA 1097

Qy        1100 AAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTTAGAGACACGGCTTCGGTTAAC 1159
               || ||  : || |:|: |||||  || |||    :| ::   ||  |  | :| |: ||
Db        1098 AAGACUCUUGCAAUGUGCAACAGCGAGAGAAUCCUCCUUGAGGAUUCAUCAUCAGUCAAU 1157

Qy        1160 TTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCGCTGTTTGAGGGTTCTATTACC 1219
               :  :||:: || || |:|| ||| |:||: |: |:|||  : :: ||   ::|: :
Db        1158 UACUGGUUUCCCAAAAUGAGGGAUAUGGUCAUCGUACCAUUAUUCGACAUUUCUUUGGAG 1217

Qy        1220 AGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGTGACTTCGTTTACACAGTGCTT 1279
               |  |  |||| |||  | |  || |:| : |:       || ::||: :  ||||:||::
Db        1218 ACUAGUAAGAGGACGCGCAAGGAAGUCUUAGUGUCCAAGGAUUUCGUGUUUACAGUGCUU 1277

Qy        1280 AATCATATCAGAACATATCAAGCCAAAGCGTTAACTTACCAGAACGTATTATCTTTCGTG 1339
               || || |:  |||||:| || || |||||  : || :||   || |: :: :|  : |:
Db        1278 AACCACAUUCGAACAUACCAGGCGAAAGCUCUUACAUACGCAAAUGUUUUGUCCCUUGUC 1337

Qy        1340 GAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACTGCTAGGTCTGAATGGGATGTA 1399
               || :| |:  ||:|  | |: |: |: || ||:|: || || |||:| |||:||||:|:
Db        1338 GAAUCGAUUCGAUCGAGGGUAAUCAUUAACGGUGUGACAGCGAGGUCCGAAUGGGAUGUG 1397

Qy        1400 GATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTCTTGCAGACTAAGCTGGCTGCG 1459
               || ||| |  :  : ||| ||::|:| |:||| :: : | :||| ||:||||: || |
Db        1398 GACAAAUCUUUGUUACAAUCCUUGUCCAUGACGUUUUACCUGCAUACUAAGCUUGCCGUU 1457

Qy        1460 CTTCAAGACGATATAGTAATGGGAAAGTTTCGGTGCTTGGATAAGACCACTTCTGAACTT 1519
               |:  | || ||  :| : |:  | |||::: |   |      || ||    :   | | :
Db        1458 CUAAAGGAUGACUUACUGAUUAGCAAGUUUAGUCUCGGUUCGAAAACGGUGUGCCAGCAU 1517
```

```
Qy   1520 ATTTGGGATGAGGTGGGCAAATTTTTTGGAAACGTTTTCCCCACTATCAAAGAGAGATTG 1579
           : :||||:||| :          :::|| ||||  :: ||| |  : ||||||||| :
Db   1518 GUGUGGGAUGAGAUUUCGCUGGCGUUUGGGAACGCAUUUCCCUCCGUGAAAGAGAGACUC 1577

Qy   1580 GTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTGAAGATCAAGATCCCAGATCTG 1639
           :|| ||||||| :: :    |:    |   | ||  :  |||:|| | : || ||:|:
Db   1578 UUGAACAGGAAACUUAUCAGAGUGGCAGGCGACGCAUUAGAGAUCAGGGUGCCUGAUCUA 1637

Qy   1640 TATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACCAAGTCTGAGGAGTTACCGCAT 1699
          :|:|: || :   | ||||| :: |:  |:|| :|||     :|:| |||  : ||
Db   1638 UAUGUGACCUUCCACGACAGAUUAGUGACUGAGUACAAGGCCUCUGUGGACAUGCCUGCG 1697

Qy   1700 CTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATGTACGACGCGTTATCAGAATTA 1759
          |: || |: | |||| |  : |||||| | ||    |:|:|| | ||  : :|||| ::|
Db   1698 CUUGACAUUAGGAAGAAGAUGGAAGAAACGGAAGUGAUGUACAAUGCACUUUCAGAGUUA 1757

Qy   1760 TCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAGTTCAAAGACATGTGCAAGGCT 1819
          :|  :  : | ||   |:|| || ::|||: : |     ::     | |:|:|| |  |:
Db   1758 UCGGUGUUAAGGGAGUCUGACAAAUUCGAUGUUGAUGUUUUUUCCCAGAUGUGCCAAUCU 1817

Qy   1820 TTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTTGCAGTGGCCGAGAATAGAAGC 1879
          :: || |::   ||      ||||||    |: |: |: || |:       ||:   |||
Db   1818 UUGGAAGUUGACCCAAUGACGGCAGCGAAGGUUAUAGUCGCGGUCAUGAGCAAUGAGAGC 1877

Qy   1880 GGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAATGTGGCTAAGGCTCT------T 1933
          ||: : ||:|: || :::||    || || |||| |||:|: ||    ||: :      :
Db   1878 GGUCUGACUCUCACAUUUGAACGACCUACUGAGGCGAAUGUUGCGCUAGCUUUACAGGAU 1937

Qy   1934 AAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCGACATCCGAAGAGGTGAACGTA 1993
           ||   | ||| :| || |  |   :     ::    | | |   |  || |
Db   1938 CAAGAGAAGGCUUCAGAAGGUGCAUUGGUAGUUACCUCAAGAGAAGUUGAAGAACCGUCC 1997

Qy   1994 AATAAATTTTCTATTGCTGAGAAAGGGAGATTGCCTGTGTGTGCAGAAAGTCATGGTTTG 2053
          |  ||   ::| |: ||      || |  |      |   |:   |   |  |:  :  |
Db   1998 AUGAAGGGUUCGAUGGCCAGAGGAGAGUUACAAUUAGCUGGUCUUGCUGGAGAUCAUCCG 2057

Qy   2054 ACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTCAACGATTTCCATAAGGCTTGC 2113
            |    |  | :   || || ||||| : |||:|  :  |  |::  ||:| |||
Db   2058 GAGUCGUCCUAUUCUAAGAACGAGGAGAUAGAGUCUUUAGAGCAGUUUCAUAUGGCGACG 2117

Qy   2114 GTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTCTACACTGGCTCACTCAAAGTT 2173
          |  ||:    : |::   ||||| |:|   :|| ::|: :|||| ||  |  : ||||::
Db   2118 GCAGAUUCGUUAAUUCGUAAGCAGAUGAGCUCGAUUGUGUACACGGGUCCGAUUAAAGUU 2177

Qy   2174 CAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCGTTGTCCGCCACTGTATCAAAT 2233
          || ||||:||| |||: : : || ||  :|| ||| :|  : :| ||  | |: :| ||:
Db   2178 CAGCAAAUGAAAAACUUUAUCGAUAGCCUGGUAGCAUCACUAUCUGCUGCGGUGUCGAAU 2237

Qy   2234 CTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCTGATTCCAGGGAGAAAGTTGGT 2293
          |:   ||||   |: || ||:  ||  |    :||   :||  || |  | ||  ::||
Db   2238 CUCGUCAAGAUCCUCAAAGAUACAGCUGCUAUUGACCUUGAAACCCGUCAAAAGUUUGGA 2297

Qy   2294 GTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCTGCGGCCAAAGGTCATTCATGG 2353
          |: : |||:|:  | :  |  |||:|| :  :||||||  |||||||  |:||: ||:||
Db   2298 GUCUUGGAUGUUGCAUCUAGGAAGUGGUUAAUCAAACCAACGGCCAAGAGUCAUGCAUGG 2357

Qy   2354 GGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCACTTCTATCTTATGAAGGAGAT 2413
          || |::|:        ||  | ||||      :   || |:: :    :|:|| |   |
Db   2358 GGUGUUGUUGAAACCCACGCGAGGAAGUAUCAUGUGGCGCUUUUGGAAUAUGAUGAGCAG 2417

Qy   2414 AGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTATCATCTGATACAATGGTATAT 2473
           |  :||:|||       || :|||| || |: ||:|:    :|:||  |  : |: :|:
Db   2418 GGUGUGGUGACAUGCGAUGAUUGGAGAAGAGUAGCUGUUAGCUCUGAGUCUGUUGUUUAU 2477

Qy   2474 TCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATGAGAGACGGTGAACCCCACGAA 2533
          :| || |: || || |:|  || :|:| | | |    :  || |||| ||||| || |
Db   2478 UCCGACAUGGCGAAACUCAGAACUCUGCGCAGACUGCUUCGAAACGGAGAACCGCAUGUC 2537

Qy   2534 CCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGTTGTGGAAAGTACAAAGGAGAT 2593
            :|  |||||| : |: |::|:||| || |: || || :|:|||||   ||||| |  :
Db   2538 AGUAGCGCAAAGGUUGUUCUUGUGGACGGAGUUCCGGGCUGUGGAAAAACCAAAGAAAUU 2597

Qy   2594 TTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTTCCTGGAAAACAAGCTGCTGCT 2653
           ::   ||  :: |: ::||:|| ||: : |: :: |: ||:|| || ||||| || |
Db   2598 CUUUCCAGGGUUAAUUUUGAUGAAGAUCUAAUUUUAGUACCUGGGAAGCAAGCCGCGGAA 2657

Qy   2654 ATGATCAGAAGAAGGGCTAATTCATCTGGACTGATAAGAGCCACAATGGACAATGTGAGA 2713
          |:||:||||||| | || ||::| :| ||  : |:    ||||| | |||||| |: | |
Db   2658 AUGAUCAGAAGACGUGCGAAUUCCUCAGGGAUUAUUGUGGCCACGAAGGACAACGUUAAA 2717

Qy   2714 ACGGTAGATTCACTTCTAATGCAT---------CCAAAACCGCGATCACACAAGAGGCTT 2764
          || |: ||::|  :  : |:| |:            | ||   |      ||||||| :
Db   2718 ACCGUUGAUUCUUUCAUGAUGAAUUUUGGGAAAAGCACACGCUGUCAGUUCAAGAGGUUA 2777

Qy   2765 TTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTTAACTTCCTGGTGCTTATCTCT 2824
          :: |::||:||||||::||:| :||| || ||::|:|::|| :: |: |:|   |: :|
Db   2778 UUCAUUGAUGAAGGGUUGAUGUUGCAUACUGGUUGUGUUAAUUUUCUUGUGGCGAUGUCA 2837

Qy   2825 GGTTGCGACATCGCATACATTTACGGAGATACACAGCAGATTCCTTTCATTAACAGAGTT 2884
             :|||| |: |||:|  :::||||||| ||||||||||::|| : ||: || ||||::
Db   2838 UUGUGCGAAAUUGCAUAUGUUUACGGAGACACACAGCAGAUUCCAUACAUCAAUAGAGUU 2897

Qy   2885 CAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAAGTGGATGAAGTTGAGATGAGG 2944
                ::||||:| |||   ||::::|  ||  :| |||: || || |: ||||   |
Db   2898 UCAGGAUUCCCGUACCCCGCCCAUUUUGCCAAAUUGGAAGUUGACGAGGUGGAGACACGC 2957

Qy   2945 AGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTCCTACAATCGAAGTACGAAGGA 3004
          || || || |:  | :| ||||  ||:|: |    ::  |:  |   ||  :| || ||
Db   2958 AGAACUACUCUCCGUUGUCCAGCCGAUGUCACACAUUAUCUGAACAGGAGAUAUGAGGGC 3017

Qy   3005 GCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCATCTGAGATGATAGGCGGTAAG 3064
             |: |  | |||::|  | |:  ||   :| |: :|    ||||:| : |||||
Db   3018 UUUGUCAUGAGCACUUCUUCGGUUAAAAAGUCUGUUUCGCAGGAGAUGGUCGGCGGAGCC 3077

Qy   3065 GGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGGAAAATTGTAACTTTCACTCAGGCT 3124
          |  |:  : ||     : :| |||||  :  | || || |:  : ||::: || ||  |
Db   3078 GCCGUGAUCAAUCCGAUCUCAAAACCCUUGCAUGGCAAGAUCCUGACUUUUACCCAAUCG 3137

Qy   3125 GATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTGAACACCGTTCATGAGATCCAA 3184
          ||:|||   |   :       |  || :|:    |:|:  |||| |: ||:||  : |||
Db   3138 GAUAAAGAAGCUCUGCUUUCAAGAGGGUAUUCAGAUGUUCACACUGUGCAUGAAGUGCAA 3197

Qy   3185 GGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACGGCAACTCCACTGACTCTGATT 3244
          || || || :     ||:|: :| |: |: || :: ||  | || ||| :  |  : |::
Db   3198 GGCGAGACAUACUCUGAUGUUUCACUAGUUAGGUUAACCCCUACACCAGUCUCCAUCAUU 3257

Qy   3245 TCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGACACACAAAGAGCTTCAAATAT 3304
           |         ||| ||:|:: : |:|||  :| | || |||||        :||| :|
Db   3258 GCAGGAGACAGCCCACAUGUUUUGGUCGCAUUGUCAAGGCACACCUGUUCGCUCAAGUAC 3317

Qy   3305 TACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGTGATTTGTCTTCTTTAAGCTCC 3364
          :|||| |: |:  : ||:||:::||:    |: |::|| ||: :        : |||:|
Db   3318 UACACUGUUGUUAUGGAUCCUUUAGUUAGUAUCAUUAGAGAUCUAGAGAAACUUAGCUCG 3377

Qy   3365 TTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGATAGCAATTACAGATGGATGCA 3424
          : | : ::||| |:|:|:| ||: || ||||| |    |:|||||::||||||: ||  |
Db   3378 UACUUGUUAGAUAUGUAUAAGGUCGAUGCAGGAACACAAUAGCAAUUACAGAUUGACUCG 3437

Qy   3425 GTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAATCAGGAGACTTTCCAGATCTA 3484
          |:|::||||||:   ||:|: :::|: ||| | || ||  | || ||  :: | ||: :
Db   3438 GUGUUCAAAGGUUCCAAUCUUUUUGUUGCAGCGCCAAAGACUGGUGAUAUUUCUGAUAUG 3497

Qy   3485 CAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACTATACTTAACAAGTATGATGCT 3544
          |||:: :| :| ||:   :| |:||| || || || || |:  : || || : :||:||:
Db   3498 CAGUUUUACUAUGAUAAGUGUCUCCCAGGCAACAGCACCAUGAUGAAUAAUUUUGAUGCU 3557

Qy   3545 GTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAGGATTGTGTTCTTGATTTTTCC 3604
          |::||||:||||::   :|| | :    : ||:|: || ||::|  :  : ||: : :|
Db   3558 GUUACCAUGAGGUUGACUGACAUUUCAUUGAAUGUCAAAGAUUGCAUAUUGGAUAUGUCU 3617

Qy   3605 AAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTAGAGCCAGTTTTGCGTACCGCG 3664
          ||   : ::|    ||| |||||    |    |   |:|   ||  :  : || || |||
Db   3618 AAGUCUGUUCGUGCGCCUAAGGAUCAAAUCAAACCACUAAUACCUAUGGUACGAACGGCG 3677

Qy   3665 GCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTGGTTGCAATGATTAAAAGAAT 3724
```

```
Db       3678 GCAGAAAUGCCACGCCAGACUGGACUAUUGGAAAAUUUAGUGGCGAUGAUUAAAAGAAAC 3737

Qy       3725 TTCAACGCACCAGACCTGACGGGGACGATTGACATTGAGAGCACCGCATCTGTTGTAGTA 3784

Db       3738 UUUAACGCACCCGAGUUGUCUGGCAUCAUUGAUAUUGAAAAUACUGCAUCUUUGGUUGUA 3797

Qy       3785 GATAAGTTTTTGATAGCTATTTTATTAAAAAAGAAAAATACACAAAAAATATTGCTGGA 3844

Db       3798 GAUAAGUUUUUUGAUAGUUAUUUGCUUAAAGAAAAAAGAAAACCAAAUAAAAAUGUUUCU 3857

Qy       3845 GTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAACAGGAAAGAAGTACTATTGGAC 3904

Db       3858 UUGUUCAGUAGAGAGUCUCUCAAUAGAUGGUUAGAAAAGCAGGAACAGGUAACAAUAGGC 3917

Qy       3905 GACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATCGATCAGTACAAGCACATGATC 3964

Db       3918 CAGCUCGCAGAUUUUGAUUUUGUGGAUUUGCCAGCAGUUGAUCAGUACAGACACAUGAUU 3977

Qy       3965 AAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAGAATGAATACCCTGCTCTGCAA 4024

Db       3978 AAAGCACAACCCAAACAAAAGUUGGACACUUCAAUCCAAACGGAGUACCCGGCUUUGCAG 4037

Qy       4025 ACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTGGCCGGTTTCTCA---GAGCTT 4081

Db       4038 ACGAUUGUGUACCAUUCAAAAAAGAUCAAUGCAAUAUUCGGCCCGUUGUUUAGUGAGCUU 4097

Qy       4082 ACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTTCTTTTCTTTACTAGGAAAACT 4141

Db       4098 ACUAGGCAAUUACUGGACAGUGUUGAUUCGAGCAGAUUUUUGUUUUUCACAAGAAAGACA 4157

Qy       4142 CCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCGCACGTTCCTATGGATGTGTTA 4201

Db       4158 CCAGCGCAGAUUGAGGAUUUCUUCGGAGAUCUCGACAGUCAUGUGCCGAUGGAUGUCUUG 4217

Qy       4202 GAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAGTTTCATTGTGCTGTAGAGTAT 4261

Db       4218 GAGCUGGAUAUAUCAAAAUACGACAAAUCUCAGAAUGAAUUCCACUGUGCAGUAGAAUAC 4277

Qy       4262 GAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCCGAAGTGTGGAAACAAGGGCAC 4321

Db       4278 GAGAUCUGGCGAAGAUUGGGUUUUGAAGACUUCUUGGGAGAAGUUUGGAAACAAGGGCAU 4337

Qy       4322 AGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAGACATGTCTGTGGTATCAAAGG 4381

Db       4338 AGAAAGACCACCCUCAAGGAUUAUACCGCAGGUAUAAAAACUUGCAUCUGGUAUCAAAGA 4397

Qy       4382 AAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTTATAATAGCAGCTTGCTTGGGT 4441

Db       4398 AAGAGCGGGGACGUCACGACGUUCAUUGGAAACACUGUGAUCAUUGCUGCAUGUUUGGCC 4457

Qy       4442 TCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTTTGTGGAGACGATTCCGTTTTG 4501

Db       4458 UCGAUGCUUCCGAUGGAGAAAAUAAUCAAAGGAGCCUUUUGCGGUGACGAUAGUCUGCUG 4517

Qy       4502 TATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCATGTGCTAATCTCATGTGGAAT 4561

Db       4518 UACUUUCCAAAGGGUUGUGAGUUUCCGGAUGUGCAACACUCCGCGAAUCUUAUGUGGAAU 4577

Qy       4562 TTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTTTGTGGTAGATACATCATACAC 4621

Db       4578 UUUGAAGCAAAACUGUUUAAAAAACAGUAUGGAUACUUUUGCGGAAGAUAUGUAAUACAU 4637

Qy       4622 CATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAGTTGATCTCCAAACTTGGGGCA 4681

Db       4638 CACGACAGAGGAUGCAUUGUGUAUUACGAUCCCCUAAAGUUGAUCUCGAAACUUGGUGCU 4697

Qy       4682 AAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGGGTGTCTTTGTGCGATGTTGCT 4741

Db       4698 AAACACAUCAAGGAUUGGGAACACUUGGAGGAGUUCAGAAGGUCUCUUUGUGAUGUUGCU 4757

Qy       4742 TGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTGAACGCAGCTATCAAGGAGGTT 4801

Db       4758 GUUUCGUU---GAACAAUUGUGCGUAUUACACACAGUUGGACGACGCUGUAUGGGAGGUU 4814

Qy       4802 CATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGTGTTAACAAATTTTTGTGTGAT 4861

Db       4815 CAUAAGACCGCCCCUCCAGGUUCGUUUGUUUAUAAAAGUCUGGUGAAGUAUUUGUCUGAU 4874

Qy       4862 AAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAGTCTCAGAGATACTGTCAAAAT 4921

Db       4875 AAAGUUCUUUUUAGAAGUUUGUUUAUAGAUGGCUCUAGUUGUUAAAGGAAAAGUGAAUAU 4934

Qy       4922 TAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACTTCCGGCATTCATGACTAAGGT 4981

Db       4935 CAAUGAGUUUAUCGACCUGUCAAAAAUGGAGAAGAUCUUACCGUCGAUGUUUACCCCUGU 4994

Qy       4982 CAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGCTGTTAAGAATGATAGTCTTTC 5041

Db       4995 AAAGAGUGUUAUGUGUUCCAAAGUUGAUAAAAUAAUGGUUCAUGAGAAUGAGUCAUUGUC 5054

Qy       5042 TGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAAAGGGTATGTGTGCTTAGCTGA 5101

Db       5055 AGAGGUGAACCUUCUUAAAGGAGUUAAGCUUAUUGAUAGUGGAUACGUCUGUUUAGCCGG 5114

Qy       5102 TTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTGCCGTGGTGGTGTCAGTGTTTG 5161

Db       5115 UUUGGUCGUCACGGGCGAGUGGAACUUGCCUGACAAUUGCAGAGGAGGUGUGAGCGUGUG 5174

Qy       5162 TATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAACGCTGGGTGCGTATCACGCCCC 5221

Db       5175 UCUGGUGGACAAAAGGAUGGAAAGAGCCGACGAGGCCACUCUCGGAUCUUACUACACAGC 5234

Qy       5222 TGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAATTATTCAATAACATCCGAGGA 5281

Db       5235 AGCUGCAAAGAAAAGAUUUCAGUUCAAGGUCGUUCCCAAUUAUGCUAUAACCACCCAGGA 5294

Qy       5282 TGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAAAGGAGTGGCTATGGAAGAAGG 5341

Db       5295 CGCGAUGAAAAACGUCUGGCAAGUUUUAGUUAAUAUUAGAAAUGUGAAGAUGUCAGCGGG 5354

Qy       5342 ATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGTAGTACATAAAAATAATGTAAG 5401

Db       5355 UUUCUGUCCGCUUUCUCUGGAGUUUGUGUCGGUGUGUAUUGUUUAUAGAAAUAAUAUAAA 5414

Qy       5402 AAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGGCTCGCCAATTGAACTCACTGA 5461

Db       5415 AUUAGGUUUGAGAGAGAAGAUUACAAACGUGAGAGACGGAGGGCCCAUGGAACUUACAGA 5474

Qy       5462 AAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGCTGTGAAACTCGAAAAGGTTC- 5520

Db       5475 AGAAGUCGUUGAUGAGUUCAUGGAAGAUGUCCCUAUGUCGAUCAGGCUUGCAAAGUUUCG 5534

Qy       5521 -----------CGGAAAACAAAAAAGAAATGGTAGGTAATAATGTTAATAAT-------- 5561

Db       5535 AUCUCGAACCGGAAAAAAGAGUGAUGUCCGCAAAGGGAAAAAUAGUAGUAAUGAUCGGUC 5594

Qy       5562 -------AAGAAAATAAATAACAGTGGTAAGAAGGGTTTTAAAATTGAGGAAATTGAGGA 5614

Db       5595 AGUGCCGAACAAGAACUAUAGAAAUGUUAAGGAUUUUGGAGGAAUGAGUUUUAAAAAGAA 5654

Qy       5615 TAATGTAAGTGATGACGAGT---------CTATCGCGTCATCGAGTACGTTTTAATCAAT 5665

Db       5655 UAAUUUAAUCGAUGAUGAUUCGGAGGCUACUGUCGCCGAAUCGGAUUCGUUUUA---AAU 5711

Qy       5666 ATGCCTTATACAATCAACTCTCCGAGCCAATTTGTTTACTTATCTTCCGCTTACGCAGAT 5725

Db       5712 AUGUCUUACAGUAUCACUACUCCAUCUCAGUUCGUGUUCUUGUCAUCAGCGUGGGCCGAC 5771

Qy       5726 CCTGTGCAGCTGATCAATCTGTGTACAAATGCATTGGGTAACCAGTTTCAAACGCAACAA 5785

Db       5772 CCAAUAGAGUUAAUUAAUUUAUGUACUAAUGCCUUAGGAAAUCAGUUUCAAACACAACAA 5831

Qy       5786 GCTAGGACAACAGTCCAACAGCAATTTGCGGATGCCTGGAAACCTGTGCCTAGTATGACA 5845

Db       5832 GCUCGAACUGUCGUUCAAAGACAAUUCAGUGAGGUGUGGAAACCUUCACCACAAGUAACU 5891
```

```
Qy       5846 GTGAGATTTCCTGCATCGGATTTCTATGTGTATAGATATAATTCGACGCTTGATCCGTTG 5905
              |: || :: ||:|     || ::  | |:|:| || :| ||: ||    : || ||| :
Db       5892 GUUAGGUUCCCUGACAGUGACUUUAAGGUGUACAGGUACAAUGCGGUAUUAGACCCGCUA 5951

Qy       5906 ATCACGGCGTTATTAAATAGCTTTGATACTAGAAATAGAATAATAGAGGTTGATAATCAA 5965
               :||| ||  : ::|  :   :: || ||:|||||:||||:||:||| |::|| ||:||
Db       5952 GUCACAGCACUGUUAGGUGCAUUCGACACUAGAAAUAGAAUAAUAGAAGUUGAAAAUCAG 6011

Qy       5966 CCCGCACCGAATACTACTGAAATCGTTAACGCGACTCAGAGGGTAGACGATGCTACTGTA 6025
               |    || |  ||: | || |   :  | || ||:|  || |:|||||| || || |:
Db       6012 GCGAACCCCACGACUGCCGAGACGUUAGAUGCUACUCGUAGAGUAGACGACGCAACGGUG 6071

Qy       6026 GCTATAAGGGCTTCAATCAATAATTTGGCTAATGAACTGGTTCGTGGAACTGGCATGTTC 6085
              || |:||||    | |: ||:||:::       ||| :| :  | ||||| ||    :
Db       6072 GCCAUAAGGAGCGCGAUAAAUAAUUUAAUAGUAGAAUUGAUCAGAGGAACCGGAUCUUAU 6131

Qy       6086 AATCAAGCAGGCTTTGAGACTGCTAGTGGACTTGTCTGGACCACAACTCCGGCTACTTAG 6145
              ||:|        :: ||||   |:  :||  : |: :||||| |   :|| || ||:
Db       6132 AAUCGGAGCUCUUUCGAGAGCUCUUCUGGUUUGGUUUGGACCUCUGGUCCUGCAACU--- 6188

Qy       6146 CTATTGTTGTGAGATTTCCTAAAATAAAGTCGCTGAAGACTTAAAATTCAGGGTGGCTGA 6205
               :   |: |: |   : | :|| | | |   | :   | |   ||   ||  |:||
Db       6189 -UGAGGUAGUCAAGAUGCAUAAUAAAUAACGGAUUGUGUCCGUAAUCACA-CGUGGUGCG 6246

Qy       6206 TACCAAAATCAGCAGTGGTTGTTCGTCCACTTAAATATAACGATTGTCATATCTGGATCC 6265
              :|| | ||     ||:| :: : | :||||::|||:  || | ::|:  : :  |    |
Db       6247 UACGAUAACGCAUAGUGUUUUUCCCUCCACUUAAAUCGAAGGGUUGU-GUCUUGGAUCGC 6305

Qy       6266 AACAGTTAAACCATGTGATGGTGTATACTGTGGTATGGCGTAAAACATCGGAGAGGTTCG 6325
                  |: |||             :|:||    | | |     ||  |   ||| ||::||
Db       6306 GCGGGUCAAAUGUAUAUGGUUCAUAUACAUCCGCAGGCACGUAAUAAAGCGAGGGGUUCG 6365

Qy       6326 AATCCTCCCCTAACCGCCGGTAGCGGCCCA 6355
              ||:|| ||| : ||| ||||:|| ||||||
Db       6366 AAUCCCCCCGUUACCCCCGGUAGGGGCCCA 6395

RESULT 3
US-09-466-422-1
; Sequence 1, Application US/09466422
; Patent No. 6303779
;  GENERAL INFORMATION:
;       APPLICANT: GARGER, STEPHEN
;                  HOLTZ, R. BARRY
;                  McCULLOCH, MICHAEL
;                  TURPEN, THOMAS
;       TITLE OF INVENTION: A PROCESS FOR ISOLATING AND
;                           PURIFYING VIRUSES SOLUBLE PROTEINS AND PEPTIDES
;                           FROM PLANT SOURCES
;       NUMBER OF SEQUENCES: 5
;       CORRESPONDENCE ADDRESS:
;            ADDRESSEE: Howrey & Simon
;            STREET: 1299 Pennsylvania Avenue N.W.
;            CITY: Washington
;            STATE: DC
;            COUNTRY: USA
;            ZIP: 20004
;       COMPUTER READABLE FORM:
;            MEDIUM TYPE: Diskette
;            COMPUTER: IBM Compatible
;            OPERATING SYSTEM: DOS
;            SOFTWARE: FastSEQ for Windows Version 2.0
;       CURRENT APPLICATION DATA:
;            APPLICATION NUMBER: US/09/466,422
;            FILING DATE: 17-Dec-1999
;            CLASSIFICATION: <Unknown>
;       PRIOR APPLICATION DATA:
;            APPLICATION NUMBER: 09/037,751
;            FILING DATE: <Unknown>
;       ATTORNEY/AGENT INFORMATION:
;            NAME: Halluin, Albert P
;            REGISTRATION NUMBER: 25,277
;            REFERENCE/DOCKET NUMBER: 00801.0140.999
;       TELECOMMUNICATION INFORMATION:
;            TELEPHONE: 650-463-8109
;            TELEFAX: 650-463-8400
;            TELEX: <Unknown>
;  INFORMATION FOR SEQ ID NO: 1:
;       SEQUENCE CHARACTERISTICS:
;            LENGTH: 6395 base pairs
;            TYPE: nucleic acid
;            STRANDEDNESS: single
;            TOPOLOGY: unknown
;       MOLECULE TYPE: Genomic RNA
;       SEQUENCE DESCRIPTION: SEQ ID NO: 1:
US-09-466-422-1

  Query Match             38.8%;  Score 2468;  DB 3;  Length 6395;
  Best Local Similarity   44.6%;  Pred. No. 0;
  Matches 2851;  Conservative 1173;  Mismatches 2300;  Indels   66;  Gaps   11;

Qy         20 ACAACAACAATTAAAACAAAAACAACATATTACAAACAACAAACAACAACAATGGCACAC 79
              || |  |  |  |||  | ||||||||:   |   || |   ||||  ||||:|||| ||
Db         18 ACCAACAACAACAAACAACAAACAACAUUACAAUUACUAUUUACAAUUACAAUGGCAUAC 77

Qy         80 ATACAATCTATAATTAGCAACGCCCTTCTTGAAAGCGTGAGTGGTAAAAACACTCTCGTT 139
              | |||  |    |  |     ||  : |: || |  |:  | || || ||| |  : |:
Db         78 ACACAGACAGCUACCACAUCAGCUUUGCUGGACACUGUCCGAGGAAACAACUCCUUGGUC 137

Qy        140 AATGACCTTGCAAGAAGGCGCATGTACGATACGGCCGTGGAAGAATTTAACGCCCGCGAC 199
              ||:|| |: ||||   | ||  : :|||| || || |: ||||| :::||||| || |||
Db        138 AAUGAUCUAGCAAAGCGUCGUCUUUACGACACAGCGGUUGAAGAGUUUAACGCUCGUGAC 197

Qy        200 CGTAGACCAAAGGTCAACTTTTCCAAAACTATTAGCGAAGAGCAAACGCTTCTAGTCTCC 259
              || || || ||||: |||::::| ||| :||: ||||| ||||| ||||:: : |   ||
Db        198 CGCAGGCCCAAGGUGAACUUUUCAAAAGUAAUAAGCGAGGAGCAGACGCUUAUUGCUACC 257

Qy        260 AACGCGTACCCGGAGTTCCAGATTACCTTTTATAATACTCAAAATGCCGTACACAGTTTG 319
                 |||:| || || ::||| |::|| ::::|:|| || |||||:||||: ||     :
Db        258 CGGGCGUAUCCAGAAUUCCAAAUUACAUUUUAUAACACGCAAAAUGCCGUGCAUUCGCUU 317

Qy        320 GCTGGAGGTTTGAGAGCATTAGAATTGGAATATCTGATGCTACAAGTTCCCTATGGATCG 379
              || || || ::| || | ::|||| :||||:|:|:||:| : ||| ::|||:| |||:|
Db        318 GCAGGUGGAUUGCGAUCUUUAGAACUGGAAUAUCUGAUGAUGCAAAUUCCCUACGGAUCA 377

Qy        380 CCGACATATGATATAGGTGGGAACTTTGCAGCACATTTGTTCAAAGGCAGGGATTACGTG 439
                ||| :|:|| |:||| ||||| :::||| | ||: :|::||| ||  | |  :| |:
Db        378 UUGACUUAUGACAUAGGCGGGAAUUUUGCAUCGCAUCUGUUCAAGGGACGAGCAUAUGUA 437

Qy        440 CATTGCTGTATGCCCAATCTGGACATACGAGATATAATGAGGCACGAAGGACAAAAGGAC 499
              || :||:| |:||||||| |:|||| : ||||| |: |:| |||||||||| || || |||
Db        438 CACUGCUGCAUGCCCAACCUGGACGUUCGAGACAUCAUGCGGCACGAAGGCCAGAAAGAC 497

Qy        500 TCAATTGAGATGTATTTGTCCAGATTGTCTCGTTCTAACAAGGTAATTCCTGAGTTTCAA 559
                 |::||  : :|  : :| ||  :     |       ||   | : ||  | :: |||
Db        498 AGUAUUGAACUAUACCUUUCUAGGCUAGAGAGAGGGGGGAAAACAGUCCCCAACUUCCAA 557

Qy        560 AGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAAGTCTGCTGCTCTAAAACTTTT 619
              | ||| || ::: |||| :| ||||||  :||  | || |    |:|    || ||:::
Db        558 AAGGAAGCAUUUGACAGAUACGCAGAAAUUCCUGAAGACGCUGUCUGUCACAAUACUUUC 617

Qy        620 CAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGAAGATACGCTGTTGCTCTGCAC 679
              |||      |||   || |||    || |    || |||   :| ||  ::|| |: |||
Db        618 CAGACAAUGCGACAUCAGCCGAUGCAGCAAUCAGGCAGAGUGUAUGCCAUUGCGCUACAC 677

Qy        680 AGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCGTTAATATCTAAGAATATACAT 739
              ||  : :|:|| |: || |   |:|||:: || || ||  :  :    || ||: : ||:
Db        678 AGCAUAUAUGACAUACCAGCCGAUGAGUUCGGGGCGGCACUCUUGAGGAAAAAUGUCCAU 737

Qy        740 GTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTACTAGACCAGACGGAGGTTACG 799
                 :| :|:|| ||:: |   ::  | ||     :  : |: ||  |  |  | |: |
Db        738 ACGUGCUAUGCCGCUUUCCACUUCUCCGAGAACCUGCUUCUUGAAGAUUCAUACGUCAAU 797

Qy        800 CTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGATGATGTTTCTTTTTTCTTTGCT 859
               :  | ||||:   |||   :::     | || || ||  |  :  | ::::  :::||
```

```
Db        798 UUGGACGAAAUCAACGCGUGUUUUUCGCGCGAUGGAGACAAGUUGACCUUUUCUUUUGCA 857

Qy        860 GATGAAAGTACTTTAAATTATAGTCATAAATACAAAAATATCTTGCATTATGTAGTTAAA 919
                 || ||:||: : ||::|: |:||:|  :|    ||:|:  :  | :|:|:    |||
Db        858 UCAGAGAGUACUCUUAAUUAUUGUCAUAGUUAUUCUAAUAUUCUUAAGUAUGUGUGCAAA 917

Qy        920 TCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAGGAATTTTTAGTCACTAGGGTT 979
               |::||:: || || :|:| :|||   |:::|| : ||||| :::::||:||| || |::
Db        918 ACUUACUUCCCGGCCUCUAAUAGAGAGGUUUACAUGAAGGAGUUUUUAGUCACCAGAGUU 977

Qy        980 AATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTATATTCTGTACAAGAGTGTTAGA 1039
              ||:|| :||::::|:|| ::: | | | :|||:|| : : :: :|:||||  |:|:
Db        978 AAUACCUGGUUUUGUAAGUUUUCUAGAAUAGAUACUUUUCUUUUGUACAAAGGUGUGGCC 1037

Qy       1040 CAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATGGAAGACGCCTTTGCTTACAAG 1099
              ||   | |    ||:||:|| |||:: :|:   || |:||||||||| :    ::||||
Db       1038 CAUAAAAGUGUAGAUAGUGAGCAGUUUUAUACUGCAAUGGAAGACGCAUGGCAUUACAAA 1097

Qy       1100 AAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTTAGAGACACGGCTTCGGTTAAC 1159
              || ||  : || |:|: |||||  || |||    :| ::   ||  |  | :| |: ||
Db       1098 AAGACUCUUGCAAUGUGCAACAGCGAGAGAAUCCUCCUUGAGGAUUCAUCAUCAGUCAAU 1157

Qy       1160 TTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCGCTGTTTGAGGGTTCTATTACC 1219
              :  :||:: || || |:|| ||| |:||: |: |:|||  : :: ||   ::|: :
Db       1158 UACUGGUUUCCCAAAAUGAGGGAUAUGGUCAUCGUACCAUUAUUCGACAUUUCUUUGGAG 1217

Qy       1220 AGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGTGACTTCGTTTACACAGTGCTT 1279
              |  |  |||| |||  | |  || |:| : |:       || ::||: :  ||||:||::
Db       1218 ACUAGUAAGAGGACGCGCAAGGAAGUCUUAGUGUCCAAGGAUUUCGUGUUUACAGUGCUU 1277

Qy       1280 AATCATATCAGAACATATCAAGCCAAAGCGTTAACTTACCAGAACGTATTATCTTTCGTG 1339
              || || |:  |||||:| || || |||||  : || :||   || |: :: :|  : |:
Db       1278 AACCACAUUCGAACAUACCAGGCGAAAGCUCUUACAUACGCAAAUGUUUUGUCCCUUGUC 1337

Qy       1340 GAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACTGCTAGGTCTGAATGGGATGTA 1399
              || :| |:  ||:|  | |: |: |: || ||:|: || || |||:| |||:||||:|:
Db       1338 GAAUCGAUUCGAUCGAGGGUAAUCAUUAACGGUGUGACAGCGAGGUCCGAAUGGGAUGUG 1397

Qy       1400 GATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTCTTGCAGACTAAGCTGGCTGCG 1459
              || ||| |  :  : ||| ||::|:| |:||| :: : | :||| ||:||||: || |
Db       1398 GACAAAUCUUUGUUACAAUCCUUGUCCAUGACGUUUUACCUGCAUACUAAGCUUGCCGUU 1457

Qy       1460 CTTCAAGACGATATAGTAATGGGAAAGTTTCGGTGCTTGGATAAGACCACTTCTGAACTT 1519
              |:  | || ||  :| : |:  | |||::: |   |      || ||    :   | | :
Db       1458 CUAAAGGAUGACUUACUGAUUAGCAAGUUUAGUCUCGGUUCGAAAACGGUGUGCCAGCAU 1517

Qy       1520 ATTTGGGATGAGGTGGGCAAATTTTTTGGAAACGTTTTCCCCACTATCAAAGAGAGATTG 1579
               : :||||:||| :          :::|| ||||  :: ||| |  : ||||||||| :
Db       1518 GUGUGGGAUGAGAUUUCGCUGGCGUUUGGGAACGCAUUUCCCUCCGUGAAAGAGAGACUC 1577

Qy       1580 GTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTGAAGATCAAGATCCCAGATCTG 1639
               :|| ||||||| :: :    |:    |   | ||  :  |||:|| | : || ||:|:
Db       1578 UUGAACAGGAAACUUAUCAGAGUGGCAGGCGACGCAUUAGAGAUCAGGGUGCCUGAUCUA 1637

Qy       1640 TATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACCAAGTCTGAGGAGTTACCGCAT 1699
              :|:|: || :   | ||||| :: |:  |:|| :|||     :|:| |||  : ||
Db       1638 UAUGUGACCUUCCACGACAGAUUAGUGACUGAGUACAAGGCCUCUGUGGACAUGCCUGCG 1697

Qy       1700 CTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATGTACGACGCGTTATCAGAATTA 1759
              |: || |: | |||| |  : |||||| | ||    |:|:|| | ||  : :|||| ::|
Db       1698 CUUGACAUUAGGAAGAAGAUGGAAGAAACGGAAGUGAUGUACAAUGCACUUUCAGAGUUA 1757

Qy       1760 TCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAGTTCAAAGACATGTGCAAGGCT 1819
              :|  :  : | ||   |:|| || ::|||: : |     ::     | |:|:|| |  |:
Db       1758 UCGGUGUUAAGGGAGUCUGACAAAUUCGAUGUUGAUGUUUUUUCCCAGAUGUGCCAAUCU 1817

Qy       1820 TTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTTGCAGTGGCCGAGAATAGAAGC 1879
              :: || |::   ||      ||||||    |: |: |: || |:       ||:   |||
Db       1818 UUGGAAGUUGACCCAAUGACGGCAGCGAAGGUUAUAGUCGCGGUCAUGAGCAAUGAGAGC 1877

Qy       1880 GGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAATGTGGCTAAGGCTCT------T 1933
              ||: : ||:|: || :::||    ||  ||||| |||:|: ||    ||: :      :
Db       1878 GGUCUGACUCUCACAUUUGAACGACCUACUGAGGCGAAUGUUGCGCUAGCUUUACAGGAU 1937

Qy       1934 AAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCGACATCCGAAGAGGTGAACGTA 1993
               ||   | ||| :| || |  |   :     ::    | | |   |  || |
Db       1938 CAAGAGAAGGCUUCAGAAGGUGCAUUGGUAGUUACCUCAAGAGAAGUUGAAGAACCGUCC 1997

Qy       1994 AATAAATTTTCTATTGCTGAGAAAGGGAGATTGCCTGTGTGTGCAGAAAGTCATGGTTTG 2053
              |  ||   ::| |: ||      || |  |      |   |:   |   |  |:  :  |
Db       1998 AUGAAGGGUUCGAUGGCCAGAGGAGAGUUACAAUUAGCUGGUCUUGCUGGAGAUCAUCCG 2057

Qy       2054 ACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTCAACGATTTCCATAAGGCTTGC 2113
                |    |  | :   || || ||||| : |||:|  :  |  | :: ||:| |||
Db       2058 GAGUCGUCCUAUUCUAAGAACGAGGAGAUAGAGUCUUUAGAGCAGUUUCAUAUGGCGACG 2117

Qy       2114 GTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTCTACACTGGCTCACTCAAAGTT 2173
              |  ||:    : |::   ||||| |:|   :|| ::|: :|||| ||  |  : ||||::
Db       2118 GCAGAUUCGUUAAUUCGUAAGCAGAUGAGCUCGAUUGUGUACACGGGUCCGAUUAAAGUU 2177

Qy       2174 CAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCGTTGTCCGCCACTGTATCAAAT 2233
              || ||||:||| |||: : : || ||  :|| ||| :|  : :| ||  | |: :| ||:
Db       2178 CAGCAAAUGAAAAACUUUAUCGAUAGCCUGGUAGCAUCACUAUCUGCUGCGGUGUCGAAU 2237

Qy       2234 CTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCTGATTCCAGGGAGAAAGTTGGT 2293
              |:   ||||   |: || ||:  ||  |    :||   :||  || |  | ||  ::||
Db       2238 CUCGUCAAGAUCCUCAAAGAUACAGCUGCUAUUGACCUUGAAACCCGUCAAAAGUUUGGA 2297

Qy       2294 GTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCTGCGGCCAAAGGTCATTCATGG 2353
              |: : |||:|:  | :  |  |||:|| :  :||||||  |||||||  |:||: ||:||
Db       2298 GUCUUGGAUGUUGCAUCUAGGAAGUGGUUAAUCAAACCAACGGCCAAGAGUCAUGCAUGG 2357

Qy       2354 GGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCACTTCTATCTTATGAAGGAGAT 2413
              || |::|:        ||  | ||||      :   || |:: :    :|:|| |   |
Db       2358 GGUGUUGUUGAAACCCACGCGAGGAAGUAUCAUGUGGCGCUUUUGGAAUAUGAUGAGCAG 2417

Qy       2414 AGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTATCATCTGATACAATGGTATAT 2473
               |  :||:|||       || :|||| || |: ||:|:    :|:||  |  : |: :|:
Db       2418 GGUGUGGUGACAUGCGAUGAUUGGAGAAGAGUAGCUGUUAGCUCUGAGUCUGUUGUUUAU 2477

Qy       2474 TCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATGAGAGACGGTGAACCCCACGAA 2533
              :| || |: || || |:|  || :|:| | | |    :  || |||| |||||| || |
Db       2478 UCCGACAUGGCGAAACUCAGAACUCUGCGCAGACUGCUUCGAAACGGAGAACCGCAUGUC 2537

Qy       2534 CCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGTTGTGGAAAGTACAAAGGAGAT 2593
                :|  |||||| : |: |::|:|||| |||: || || :|:|||||   ||||| |  :
Db       2538 AGUAGCGCAAAGGUUGUUCUUGUGGACGGAGUUCCGGGCUGUGGAAAAACCAAAGAAAUU 2597

Qy       2594 TTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTTCCTGGAAAACAAGCTGCTGCT 2653
               ::   ||  :: |: ::||:|| ||: : |: :: |: ||:|| || |||||| || |
Db       2598 CUUUCCAGGGUUAAUUUUGAUGAAGAUCUAAUUUUAGUACCUGGGAAGCAAGCCGCGGAA 2657

Qy       2654 ATGATCAGAAGAAGGGCTAATTCATCTGGACTGATAAGAGCCACAATGGACAATGTGAGA 2713
              |:||:||||||| | || ||::| :| ||  : |:  | ||||| | |||||| |: | |
Db       2658 AUGAUCAGAAGACGUGCGAAUUCCUCAGGGAUUAUUGUGGCCACGAAGGACAACGUUAAA 2717

Qy       2714 ACGGTAGATTCACTTCTAATGCAT---------CCAAAACCGCGATCACACAAGAGGCTT 2764
              || |: ||::|  :  : |:| |:            | ||   |      ||||||| :
Db       2718 ACCGUUGAUUCUUUCAUGAUGAAUUUUGGGAAAAGCACACGCUGUCAGUUCAAGAGGUUA 2777

Qy       2765 TTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTTAACTTCCTGGTGCTTATCTCT 2824
              :: |::||:||||||::||:| :||| || ||::|:|::|| :: |: |:|   |: :|
Db       2778 UUCAUUGAUGAAGGGUUGAUGUUGCAUACUGGUUGUGUUAAUUUUCUUGUGGCGAUGUCA 2837

Qy       2825 GGTTGCGACATCGCATACATTTACGGAGATACACAGCAGATTCCTTTCATTAACAGAGTT 2884
                 :|||| |: |||:|  :::||||||| ||||||||||::|| : ||: || ||||::
Db       2838 UUGUGCGAAAUUGCAUAUGUUUACGGAGACACACAGCAGAUUCCAUACAUCAAUAGAGUU 2897

Qy       2885 CAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAAGTGGATGAAGTTGAGATGAGG 2944
                    ::||||:| |||   ||::::|  ||  :| |||: || || |: ||||   |
Db       2898 UCAGGAUUCCCGUACCCCGCCCAUUUUGCCAAAUUGGAAGUUGACGAGGUGGAGACACGC 2957

Qy       2945 AGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTCCTACAATCGAAGTACGAAGGA 3004
              || || || |:  | :| ||||  ||:|: |    ::  |:  |   ||  :| || ||
Db       2958 AGAACUACUCUCCGUUGUCCAGCCGAUGUCACACAUUAUCUGAACAGGAGAUAUGAGGGC 3017
```

```
Qy        3005 GCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCATCTGAGATGATAGGCGGTAAG 3064
                  |: |  | |||::|  | |:  ||   :| |: :|    ||||:| : |||||
Db        3018 UUUGUCAUGAGCACUUCUUCGGUUAAAAAGUCUGUUUCGCAGGAGAUGGUCGGCGGAGCC 3077

Qy        3065 GGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGGAAAATTGTAACTTTCACTCAGGCT 3124
               |  |:  : ||     : :| |||||  :  | || || |:  : ||::: || ||  |
Db        3078 GCCGUGAUCAAUCCGAUCUCAAAACCCUUGCAUGGCAAGAUCCUGACUUUUACCCAAUCG 3137

Qy        3125 GATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTGAACACCGTTCATGAGATCCAA 3184
               ||:|||   |   :       |  || :|:    |:|:  |||| |: ||:||  : |||
Db        3138 GAUAAAGAAGCUCUGCUUUCAAGAGGGUAUUCAGAUGUUCACACUGUGCAUGAAGUGCAA 3197

Qy        3185 GGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACGGCAACTCCACTGACTCTGATT 3244
               || || || :     ||:|: :| |: |: || :: ||  | || ||| :  |  : |::
Db        3198 GGCGAGACAUACUCUGAUGUUUCACUAGUUAGGUUAACCCCUACACCAGUCUCCAUCAUU 3257

Qy        3245 TCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGACACACAAAGAGCTTCAAATAT 3304
                |         ||| ||:|:: : |:|||  :| | || |||||        :||| :|
Db        3258 GCAGGAGACAGCCCACAUGUUUUGGUCGCAUUGUCAAGGCACACCUGUUCGCUCAAGUAC 3317

Qy        3305 TACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGTGATTTGTCTTCTTTAAGCTCC 3364
               :|||| |: |:  : ||:||:::||:    |: |::|| ||: :        : |||:|
Db        3318 UACACUGUUGUUAUGGAUCCUUUAGUUAGUAUCAUUAGAGAUCUAGAGAAACUUAGCUCG 3377

Qy        3365 TTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGATAGCAATTACAGATGGATGCA 3424
               : | : ::||| |:|:|:| ||: || ||||| |    |:|||||::|||||: ||  |
Db        3378 UACUUGUUAGAUAUGUAUAAGGUCGAUGCAGGAACACAAUAGCAAUUACAGAUUGACUCG 3437

Qy        3425 GTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAATCAGGAGACTTTCCAGATCTA 3484
               |:|::||||||:   ||:|: :::|: ||| | || ||  | || ||  :: | ||: :
Db        3438 GUGUUCAAAGGUUCCAAUCUUUUUGUUGCAGCGCCAAAGACUGGUGAUAUUUCUGAUAUG 3497

Qy        3485 CAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACTATACTTAACAAGTATGATGCT 3544
               |||:: :| :| ||:   :| |:||| || || || || |:  : || || : :||:||:
Db        3498 CAGUUUUACUAUGAUAAGUGUCUCCCAGGCAACAGCACCAUGAUGAAUAAUUUUGAUGCU 3557

Qy        3545 GTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAGGATTGTGTTCTTGATTTTTCC 3604
               |::||||:||||::   :|| | :    : ||:|: || ||::|  :  : ||: : :|
Db        3558 GUUACCAUGAGGUUGACUGACAUUUCAUUGAAUGUCAAAGAUUGCAUAUUGGAUAUGUCU 3617

Qy        3605 AAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTAGAGCCAGTTTTGCGTACCGCG 3664
               ||   : ::|    ||| |||||    |    |   |:|   ||  :  : || || |||
Db        3618 AAGUCUGUUCGUGCGCCUAAGGAUCAAAUCAAACCACUAAUACCUAUGGUACGAACGGCG 3677

Qy        3665 GCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTGGTTGCAATGATTAAAAGAAAT 3724
               || |||  |||| |     | ||||:| : |||||: : |: || |:||::||||||||
Db        3678 GCAGAAAUGCCACGCCAGACUGGACUAUUGGAAAAUUUAGUGGCGAUGAUUAAAAGAAAC 3737

Qy        3725 TTCAACGCACCAGACCTGACGGGGACGATTGACATTGAGAGCACCGCATCTGTTGTAGTA 3784
               :: ||||||||| ||  :| | || |  |::|| |::|| |  || |||:|: : |: |:|
Db        3738 UUUAACGCACCCGAGUUGUCUGGCAUCAUUGAUAUUGAAAAUACUGCAUCUUUGGUUGUA 3797

Qy        3785 GATAAGTTTTTTGATAGCTATTTTATTAAAAAAGAAAAATACACAAAAAATATTGCTGGA 3844
               ||:|||::::::||:|| :|:::  ::||| || ||| | |  |||| || | :| :
Db        3798 GAUAAGUUUUUUGAUAGUUAUUUGCUUAAAGAAAAAAGAAAACCAAAUAAAAAUGUUUCU 3857

Qy        3845 GTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAACAGGAAAGAAGTACTATTGGAC 3904
                :| : |  |  || :|  : |  |||:||:: |||||   | || | |:|  | : | |
Db        3858 UUGUUCAGUAGAGAGUCUCUCAAUAGAUGGUUAGAAAAGCAGGAACAGGUAACAAUAGGC 3917

Qy        3905 GACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATCGATCAGTACAAGCACATGATC 3964
                |  : ||  | :   |::::   ||: :||| ||  : ||:|||:|||  ||||:||:
Db        3918 CAGCUCGCAGAUUUUGAUUUUGUGGAUUUGCCAGCAGUUGAUCAGUACAGACACAUGAUU 3977

Qy        3965 AAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAGAATGAATACCCTGCTCTGCAA 4024
               || || ||||| ||||| || ::||||  ::|||: || |  || :|||| ||: :|||
Db        3978 AAAGCACAACCCAAACAAAAGUUGGACACUUCAAUCCAAACGGAGUACCCGGCUUUGCAG 4037

Qy        4025 ACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTGGCCGGTTTCTCA---GAGCTT 4081
               || |::|: :||||::| ||  |||:||| |  |: :: | |   :: :     ||||::
Db        4038 ACGAUUGUGUACCAUUCAAAAAAGAUCAAUGCAAUAUUCGGCCCGUUGUUUAGUGAGCUU 4097

Qy        4082 ACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTTCTTTTCTTTACTAGGAAAACT 4141
               || |||    : |: ||     ::||::| |  |  ::: : :: :: || || || ||
Db        4098 ACUAGGCAAUUACUGGACAGUGUUGAUUCGAGCAGAUUUUUGUUUUUCACAAGAAAGACA 4157

Qy        4142 CCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCGCACGTTCCTATGGATGTGTTA 4201
               ||||  ||||:: | || :: ::|   ||:|:||||   || |: || |:|||:|: ::
Db        4158 CCAGCGCAGAUUGAGGAUUUCUUCGGAGAUCUCGACAGUCAUGUGCCGAUGGAUGUCUUG 4217

Qy        4202 GAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAGTTTCATTGTGCTGTAGAGTAT 4261
               || |:|||:|: :| || :| || || :| ||||| || :: || :|:|| |:||| :|
Db        4218 GAGCUGGAUAUAUCAAAAUACGACAAAUCUCAGAAUGAAUUCCACUGUGCAGUAGAAUAC 4277

Qy        4262 GAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCCGAAGTGTGGAAACAAGGGCAC 4321
               || |: :||  ||||::|||: :  | || :: ::||  ||||: :||||||||||||||
Db        4278 GAGAUCUGGCGAAGAUUGGGUUUUGAAGACUUCUUGGGAGAAGUUUGGAAACAAGGGCAU 4337

Qy        4322 AGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAGACATGTCTGTGGTATCAAAGG 4381
               || || || ||  : |||||::| |  || || |: || || :|  : :||:|:|||||
Db        4338 AGAAAGACCACCCUCAAGGAUUAUACCGCAGGUAUAAAAACUUGCAUCUGGUAUCAAAGA 4397

Qy        4382 AAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTTATAATAGCAGCTTGCTTGGGT 4441
               || ||||| || |: || || ::||: || || ||:|: |: |: || || :| ::||
Db        4398 AAGAGCGGGGACGUCACGACGUUCAUUGGAAACACUGUGAUCAUUGCUGCAUGUUUGGCC 4457

Qy        4442 TCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTTTGTGGAGACGATTCCGTTTTG 4501
               :| |:| : ||||:||| ||  : |: ||||| || ::::| || |||||:    :  :|
Db        4458 UCGAUGCUUCCGAUGGAGAAAAUAAUCAAAGGAGCCUUUUGCGGUGACGAUAGUCUGCUG 4517

Qy        4502 TATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCATGTGCTAATCTCATGTGGAAT 4561
               :| :::||||||||::  || :: || ||  : ||  | :  ||  |:|: |:|:||||:
Db        4518 UACUUUCCAAAGGGUUGUGAGUUUCCGGAUGUGCAACACUCCGCGAAUCUUAUGUGGAAU 4577

Qy        4562 TTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTTTGTGGTAGATACATCATACAC 4621
               :::|| || ||||:|: :| |||   |:| || :||::::| || |||:|  : |:|||
Db        4578 UUUGAAGCAAAACUGUUUAAAAAACAGUAUGGAUACUUUUGCGGAAGAUAUGUAAUACAU 4637

Qy        4622 CATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAGTTGATCTCCAAACTTGGGGCA 4681
               || || |  |||   |: |:|:|::| ||:||  : |||::||:|:| ||||::|| ||
Db        4638 CACGACAGAGGAUGCAUUGUGUAUUACGAUCCCCUAAAGUUGAUCUCGAAACUUGGUGCU 4697

Qy        4682 AAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGGGTGTCTTTGTGCGATGTTGCT 4741
               ||||| |:||||||::  || |||:: || |||:: ||   |:|: : :| ||:|::||:
Db        4698 AAACACAUCAAGGAUUGGGAACACUUGGAGGAGUUCAGAAGGUCUCUUUGUGAUGUUGCU 4757

Qy        4742 TGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTGAACGCAGCTATCAAGGAGGTT 4801
                 ::|| :    |||   :|       :   | ||| :| |||  ||: :   |||||::
Db        4758 GUUUCGUU---GAACAAUUGUGCGUAUUACACACAGUUGGACGACGCUGUAUGGGAGGUU 4814

Qy        4802 CATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGTGTTAACAAATTTTTGTGTGAT 4861
               ||:|| |||||   :   ||::||:::| :: :||  |: :    || : :::|: :||:
Db        4815 CAUAAGACCGCCCCUCCAGGUUCGUUUGUUUAUAAAAGUCUGGUGAAGUAUUUGUCUGAU 4874

Qy        4862 AAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAGTCTCAGAGATACTGTCAAAAT 4921
               ||| :: : :::|||| :::|::: :| |:|||: :   : : | ||  |  |: || |:
Db        4875 AAAGUUCUUUUUAGAAGUUUGUUUAUAGAUGGCUCUAGUUGUUAAAGGAAAAGUGAAUAU 4934

Qy        4922 TAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACTTCCGGCATTCATGACTAAGGT 4981
                |  |||:: |: || |: :| |||  |||  |||:  : ||| |  :  : ||    |:
Db        4935 CAAUGAGUUUAUCGACCUGUCAAAAAUGGAGAAGAUCUUACCGUCGAUGUUUACCCCUGU 4994

Qy        4982 CAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGCTGTTAAGAATGATAGTCTTTC 5041
                |||||:|::|     :| |  |: || || |: |:|| :  : ||||:||     : :|
Db        4995 AAAGAGUGUUAUGUGUUCCAAAGUUGAUAAAAUAAUGGUUCAUGAGAAUGAGUCAUUGUC 5054

Qy        5042 TGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAAAGGGTATGTGTGCTTAGCTGA 5101
                || |:  |  : |::||||| |::||| :  :: | |  || :| |: :| ::||| |
Db        5055 AGAGGUGAACCUUCUUAAAGGAGUUAAGCUUAUUGAUAGUGGAUACGUCUGUUUAGCCGG 5114

Qy        5102 TTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTGCCGTGGTGGTGTCAGTGTTTG 5161
               :::||: |:  | || |||:||||  : || || || :|| | || ||:|: || |: :|
Db        5115 UUUGGUCGUCACGGGCGAGUGGAACUUGCCUGACAAUUGCAGAGGAGGUGUGAGCGUGUG 5174

Qy        5162 TATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAACGCTGGGTGCGTATCACGCCCC 5221
               : : |: || || || |:| ||||     | || || || |: ||  | :|  || |  |
```

```
Db         5175 UCUGGUGGACAAAAGGAUGGAAAGAGCCGACGAGGCCACUCUCGGAUCUUACUACACAGC 5234

Qy         5222 TGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAATTATTCAATAACATCCGAGGA 5281
                 ||:   || || |  :::   :: ||| :  : || ||::|: | |:|||  || ||||
Db         5235 AGCUGCAAAGAAAAGAUUUCAGUUCAAGGUCGUUCCCAAUUAUGCUAUAACCACCCAGGA 5294

Qy         5282 TGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAAAGGAGTGGCTATGGAAGAAGG 5341
                 ||   |||  ||   :||||||: ::||: ||:|: | |   |:|   |:|  ||  ||
Db         5295 CGCGAUGAAAAACGUCUGGCAAGUUUUAGUUAAUAUUAGAAAUGUGAAGAUGUCAGCGGG 5354

Qy         5342 ATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGTAGTACATAAAAATAATGTAAG 5401
                 : |:|:||  : :|: :||||:: |: :|  : :|: : |:  |:| |||:||: :|| 
Db         5355 UUUCUGUCCGCUUUCUCUGGAGUUUGUGUCGGUGUGUAUUGUUUAUAGAAAUAAUAUAAA 5414

Qy         5402 AAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGGCTCGCCAATTGAACTCACTGA 5461
                |  |||:::||| ||    |::   |  |:|| ||||||   ||| |: ||||: || ||
Db         5415 AUUAGGUUUGAGAGAGAAGAUUACAAACGUGAGAGACGGAGGGCCCAUGGAACUUACAGA 5474

Qy         5462 AAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGCTGTGAAACTCGAAAAGGTTC- 5520
                | | |: |::|| |||::| :||| || |: || |:| |  : |  |: | |||| ::| 
Db         5475 AGAAGUCGUUGAUGAGUUCAUGGAAGAUGUCCCUAUGUCGAUCAGGCUUGCAAAGUUUCG 5534

Qy         5521 -----------CGGAAAACAAAAAAGAAATGGTAGGTAATAATGTTAATAAT-------- 5561
                              |||| |   | |       ||| || ||:  :| :||:
Db         5535 AUCUCGAACCGGAAAAAAGAGUGAUGUCCGCAAAGGGAAAAAUAGUAGUAAUGAUCGGUC 5594

Qy         5562 -------AAGAAAATAAATAACAGTGGTAAGAAGGGTTTTAAAATTGAGGAAATTGAGGA 5614
                       || || |   |:|  | :| :||| |   :     ||:       |   || |
Db         5595 AGUGCCGAACAAGAACUAUAGAAAUGUUAAGGAUUUUGGAGGAAUGAGUUUUAAAAAGAA 5654

Qy         5615 TAATGTAAGTGATGACGAGT---------CTATCGCGTCATCGAGTACGTTTTAATCAAT 5665
                :||: :||  ||:|| || :         |: :|||   |:||  : ||::::|   ||:
Db         5655 UAAUUUAAUCGAUGAUGAUUCGGAGGCUACUGUCGCCGAAUCGGAUUCGUUUUA---AAU 5711

Qy         5666 ATGCCTTATACAATCAACTCTCCGAGCCAATTTGTTTACTTATCTTCCGCTTACGCAGAT 5725
                |:| |::| |  |:||   |:||    || :: |: : |:: :| :| || :  || || 
Db         5712 AUGUCUUACAGUAUCACUACUCCAUCUCAGUUCGUGUUCUUGUCAUCAGCGUGGGCCGAC 5771

Qy         5726 CCTGTGCAGCTGATCAATCTGTGTACAAATGCATTGGGTAACCAGTTTCAAACGCAACAA 5785
                ||  :  || : |: ||: : :|:|| ||:|| :: || || |||:::||||| ||||||
Db         5772 CCAAUAGAGUUAAUUAAUUUAUGUACUAAUGCCUUAGGAAAUCAGUUUCAAACACAACAA 5831

Qy         5786 GCTAGGACAACAGTCCAACAGCAATTTGCGGATGCCTGGAAACCTGTGCCTAGTATGACA 5845
                ||: | ||    |: |||   |||::    || |  :|||||||:   ||     : || 
Db         5832 GCUCGAACUGUCGUUCAAAGACAAUUCAGUGAGGUGUGGAAACCUUCACCACAAGUAACU 5891

Qy         5846 GTGAGATTTCCTGCATCGGATTTCTATGTGTATAGATATAATTCGACGCTTGATCCGTTG 5905
                |: || :: ||:|     || ::  | |:|:| || :| ||: ||    : || ||| : 
Db         5892 GUUAGGUUCCCUGACAGUGACUUUAAGGUGUACAGGUACAAUGCGGUAUUAGACCCGCUA 5951

Qy         5906 ATCACGGCGTTATTAAATAGCTTTGATACTAGAAATAGAATAATAGAGGTTGATAATCAA 5965
                 :||| ||  : ::|  :   :: || ||:|||||:||||:||:||| |::|| ||:|| 
Db         5952 GUCACAGCACUGUUAGGUGCAUUCGACACUAGAAAUAGAAUAAUAGAAGUUGAAAAUCAG 6011

Qy         5966 CCCGCACCGAATACTACTGAAATCGTTAACGCGACTCAGAGGGTAGACGATGCTACTGTA 6025
                 |    || |  ||: | || |   :  | || |: |  || |:|||||| || || |: 
Db         6012 GCGAACCCCACGACUGCCGAGACGUUAGAUGCUACUCGUAGAGUAGACGACGCAACGGUG 6071

Qy         6026 GCTATAAGGGCTTCAATCAATAATTTGGCTAATGAACTGGTTCGTGGAACTGGCATGTTC 6085
                || |:||||    | |: ||:||:::       ||| :| :  | ||||| ||    :
Db         6072 GCCAUAAGGAGCGCGAUAAAUAAUUUAAUAGUAGAAUUGAUCAGAGGAACCGGAUCUUAU 6131

Qy         6086 AATCAAGCAGGCTTTGAGACTGCTAGTGGACTTGTCTGGACCACAACTCCGGCTACTTAG 6145
                ||:|        :: ||||   |:  :||  : |: :||||| |   :|| || ||:
Db         6132 AAUCGGAGCUCUUUCGAGAGCUCUUCUGGUUUGGUUUGGACCUCUGGUCCUGCAACU--- 6188

Qy         6146 CTATTGTTGTGAGATTTCCTAAAATAAAGTCGCTGAAGACTTAAAATTCAGGGTGGCTGA 6205
                 :   |: |: |   : | :|| | | |   | :   | |   ||   ||  |:||
Db         6189 -UGAGGUAGUCAAGAUGCAUAAUAAAUAACGGAUUGUGUCCGUAAUCACA-CGUGGUGCG 6246

Qy         6206 TACCAAAATCAGCAGTGGTTGTTCGTCCACTTAAATATAACGATTGTCATATCTGGATCC 6265
                :|| | ||     ||:| :: : | :||||::|||:  || | ::|:  : :  |    |
Db         6247 UACGAUAACGCAUAGUGUUUUUCCCUCCACUUAAAUCGAAGGGUUGU-GUCUUGGAUCGC 6305

Qy         6266 AACAGTTAAACCATGTGATGGTGTATACTGTGGTATGGCGTAAAACATCGGAGAGGTTCG 6325
                    |: |||             :|:||    | | |     ||  |   ||| ||::||
Db         6306 GCGGGUCAAAUGUAUAUGGUUCAUAUACAUCCGCAGGCACGUAAUAAAGCGAGGGGUUCG 6365

Qy         6326 AATCCTCCCCTAACCGCCGGTAGCGGCCCA 6355
                ||:|| ||| : ||| ||||:|| ||||||
Db         6366 AAUCCCCCCGUUACCCCCGGUAGGGGCCCA 6395


RESULT 4
US-09-962-527-1
; Sequence 1, Application US/09962527
; Patent No. 6740740
;  GENERAL INFORMATION:
;       APPLICANT: GARGER, STEPHEN
;                  HOLTZ, R. BARRY
;                  McCULLOCH, MICHAEL
;                  TURPEN, THOMAS
;       TITLE OF INVENTION: A PROCESS FOR ISOLATING AND
;                           PURIFYING VIRUSES SOLUBLE PROTEINS AND PEPTIDES
;                           FROM PLANT SOURCES
;       NUMBER OF SEQUENCES: 5
;       CORRESPONDENCE ADDRESS:
;            ADDRESSEE: Howrey & Simon
;            STREET: 1299 Pennsylvania Avenue N.W.
;            CITY: Washington
;            STATE: DC
;            COUNTRY: USA
;            ZIP: 20004
;       COMPUTER READABLE FORM:
;            MEDIUM TYPE: Diskette
;            COMPUTER: IBM Compatible
;            OPERATING SYSTEM: DOS
;            SOFTWARE: FastSEQ for Windows Version 2.0
;       CURRENT APPLICATION DATA:
;            APPLICATION NUMBER: US/09/962,527
;            FILING DATE: 24-Sep-2001
;            CLASSIFICATION: <Unknown>
;       PRIOR APPLICATION DATA:
;            APPLICATION NUMBER: 09/037,751
;            FILING DATE: 10-march-1998
;       ATTORNEY/AGENT INFORMATION:
;            NAME: Halluin, Albert P
;            REGISTRATION NUMBER: 25,277
;            REFERENCE/DOCKET NUMBER: 00801.0140.999
;       TELECOMMUNICATION INFORMATION:
;            TELEPHONE: 650-463-8109
;            TELEFAX: 650-463-8400
;            TELEX: <Unknown>
;   INFORMATION FOR SEQ ID NO: 1:
;       SEQUENCE CHARACTERISTICS:
;            LENGTH: 6395 base pairs
;            TYPE: nucleic acid
;            STRANDEDNESS: single
;            TOPOLOGY: unknown
;       MOLECULE TYPE: Genomic RNA
;       SEQUENCE DESCRIPTION: SEQ ID NO: 1:
US-09-962-527-1

  Query Match             38.8%;  Score 2468;  DB 4;  Length 6395;
  Best Local Similarity   44.6%;  Pred. No. 0;
  Matches 2851;  Conservative 1173;  Mismatches 2300;  Indels   66;  Gaps   11;

Qy           20 ACAACAACAATTAAAACAAAAACAACATATTACAAACAACAAACAACAACAATGGCACAC 79
                || |  |  |  |||  | ||||||||:   |   || |   ||||  ||||:|||| ||
Db           18 ACCAACAACAACAAACAACAAACAACAUUACAAUUACUAUUUACAAUUACAAUGGCAUAC 77

Qy           80 ATACAATCTATAATTAGCAACGCCCTTCTTGAAAGCGTGAGTGGTAAAAACACTCTCGTT 139
                | |||  |    |  |     ||  : |: || |  |:  | || || ||| |  : |:
Db           78 ACACAGACAGCUACCACAUCAGCUUUGCUGGACACUGUCCGAGGAAACAACUCCUUGGUC 137

Qy          140 AATGACCTTGCAAGAAGGCGCATGTACGATACGGCCGTGGAAGAATTTAACGCCCGCGAC 199
```

```
           ||:|| |: ||||   | ||  : :|||| || || |: ||||| :::||||| || |||
Db     138 AAUGAUCUAGCAAAGCGUCGUCUUUACGACACAGCGGUUGAAGAGUUUAACGCUCGUGAC 197

Qy     200 CGTAGACCAAAGGTCAACTTTTCCAAAACTATTAGCGAAGAGCAAACGCTTCTAGTCTCC 259
           || || || ||||: |||::::| |||   |: ||||| ||||| ||||:: : |   ||
Db     198 CGCAGGCCCAAGGUGAACUUUUCAAAAGUAAUAAGCGAGGAGCAGACGCUUAUUGCUACC 257

Qy     260 AACGCGTACCCGGAGTTCCAGATTACCTTTTATAATACTCAAAATGCCGTACACAGTTTG 319
              |||:| || || ::||| |::|| ::::|:|| || |||||:||||: ||     :
Db     258 CGGGCGUAUCCAGAAUUCCAAAUUACAUUUUAUAACACGCAAAAUGCCGUGCAUUCGCUU 317

Qy     320 GCTGGAGGTTTGAGAGCATTAGAATTGGAATATCTGATGCTACAAGTTCCCTATGGATCG 379
           || || || ::| || | ::|||| :||||:|:|:||:| : ||| ::|||:| |||:|
Db     318 GCAGGUGGAUUGCGAUCUUUAGAACUGGAAUAUCUGAUGAUGCAAAUUCCCUACGGAUCA 377

Qy     380 CCGACATATGATATAGGTGGGAACTTTGCAGCACATTTGTTCAAAGGCAGGGATTACGTG 439
             ||| :|:|| |:||| ||||| :::||| | ||: :|::||| ||  | |  :| |:
Db     378 UUGACUUAUGACAUAGGCGGGAAUUUUGCAUCGCAUCUGUUCAAGGGACGAGCAUAUGUA 437

Qy     440 CATTGCTGTATGCCCAATCTGGACATACGAGATATAATGAGGCACGAAGGACAAAAGGAC 499
           || :||:| |:|||||| |:|||| : ||||| |: |:| |||||||||| || || |||
Db     438 CACUGCUGCAUGCCCAACCUGGACGUUCGAGACAUCAUGCGGCACGAAGGCCAGAAAGAC 497

Qy     500 TCAATTGAGATGTATTTGTCCAGATTGTCTCGTTCTAACAAGGTAATTCCTGAGTTTCAA 559
              |::||  : :|  : :| ||  :     |       ||   | : ||  | :: |||
Db     498 AGUAUUGAACUAUACCUUUCUAGGCUAGAGAGAGGGGGGAAAACAGUCCCCAACUUCCAA 557

Qy     560 AGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAAGTCTGCTGCTCTAAAACTTTT 619
           | ||| || ::: |||| :| ||||||  :||  | || |    |:|    || ||:::
Db     558 AAGGAAGCAUUUGACAGAUACGCAGAAAUUCCUGAAGACGCUGUCUGUCACAAUACUUUC 617

Qy     620 CAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGAAGATACGCTGTTGCTCTGCAC 679
           |||      |||   || |||    || |    || |||   :| ||  ::|| |: |||
Db     618 CAGACAAUGCGACAUCAGCCGAUGCAGCAAUCAGGCAGAGUGUAUGCCAUUGCGCUACAC 677

Qy     680 AGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCGTTAATATCTAAGAATATACAT 739
           ||  : :|:|| |: || |   |:|||:: || || ||  :  :    || ||: : ||:
Db     678 AGCAUAUAUGACAUACCAGCCGAUGAGUUCGGGGCGGCACUCUUGAGGAAAAAUGUCCAU 737

Qy     740 GTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTACTAGACCAGACGGAGGTTACG 799
              :| :|:|| ||:: |   ::  | ||     :  : |: ||  |  |  | |: |
Db     738 ACGUGCUAUGCCGCUUUCCACUUCUCCGAGAACCUGCUUCUUGAAGAUUCAUACGUCAAU 797

Qy     800 CTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGATGATGTTTCTTTTTTCTTTGCT 859
            :  | ||||:   |||   :::     | || || ||  |  :  | ::::  :::||
Db     798 UUGGACGAAAUCAACGCGUGUUUUUCGCGCGAUGGAGACAAGUUGACCUUUUCUUUUGCA 857

Qy     860 GATGAAAGTACTTTAAATTATAGTCATAAATACAAAAATATCTTGCATTATGTAGTTAAA 919
              || ||:||: : | ::|: |:||:|  :|    ||:|:  :  | :|:|:    |||
Db     858 UCAGAGAGUACUCUUAAUUAUUGUCAUAGUUAUUCUAAUAUUCUUAAGUAUGUGUGCAAA 917

Qy     920 TCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAGGAATTTTTAGTCACTAGGGTT 979
            |::||:: || || :|:| :|||   |:::|| : ||||| :::::||:||| || |::
Db     918 ACUUACUUCCCGGCCUCUAAUAGAGAGGUUUACAUGAAGGAGUUUUUAGUCACCAGAGUU 977

Qy     980 AATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTATATTCTGTACAAGAGTGTTAGA 1039
           ||:|| :||::::|:|| ::: | | | :|||:|| : : :: :|:||||  |:|:
Db     978 AAUACCUGGUUUUGUAAGUUUUCUAGAAUAGAUACUUUUCUUUUGUACAAAGGUGUGGCC 1037

Qy    1040 CAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATGGAAGACGCCTTTGCTTACAAG 1099
           ||   | |    ||:||:|| |||:: :|:   || |:||||||||| :    ::||||
Db    1038 CAUAAAAGUGUAGAUAGUGAGCAGUUUUAUACUGCAAUGGAAGACGCAUGGCAUUACAAA 1097

Qy    1100 AAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTTAGAGACACGGCTTCGGTTAAC 1159
           || ||  : || |:|: |||||  || |||    :| ::   ||  |  | :| |: ||
Db    1098 AAGACUCUUGCAAUGUGCAACAGCGAGAGAAUCCUCCUUGAGGAUUCAUCAUCAGUCAAU 1157

Qy    1160 TTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCGCTGTTTGAGGGTTCTATTACC 1219
           :  :||:: || || |:|| ||| |:||: |: |:|||  : :: ||   ::|: :
Db    1158 UACUGGUUUCCCAAAAUGAGGGAUAUGGUCAUCGUACCAUUAUUCGACAUUUCUUUGGAG 1217

Qy    1220 AGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGTGACTTCGTTTACACAGTGCTT 1279
           |  |  |||| |||  | |  || |:| : |:       || ::||: :  ||||:||::
Db    1218 ACUAGUAAGAGGACGCGCAAGGAAGUCUUAGUGUCCAAGGAUUUCGUGUUUACAGUGCUU 1277

Qy    1280 AATCATATCAGAACATATCAAGCCAAAGCGTTAACTTACCAGAACGTATTATCTTTCGTG 1339
           || || |:  |||||:| || || |||||  : || :||   || |: :: :|  : |:
Db    1278 AACCACAUUCGAACAUACCAGGCGAAAGCUCUUACAUACGCAAAUGUUUUGUCCCUUGUC 1337

Qy    1340 GAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACTGCTAGGTCTGAATGGGATGTA 1399
           || :| |:  ||:|  | |: |: |: || ||:|: || || |||:| |||:||||:|:
Db    1338 GAAUCGAUUCGAUCGAGGGUAAUCAUUAACGGUGUGACAGCGAGGUCCGAAUGGGAUGUG 1397

Qy    1400 GATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTCTTGCAGACTAAGCTGGCTGCG 1459
           || ||| |  :  : ||| ||::|:| |:||| :: : | :||| ||:||||: || |
Db    1398 GACAAAUCUUUGUUACAAUCCUUGUCCAUGACGUUUUACCUGCAUACUAAGCUUGCCGUU 1457

Qy    1460 CTTCAAGACGATATAGTAATGGGAAAGTTTCGGTGCTTGGATAAGACCACTTCTGAACTT 1519
           |:  | || ||  :| : |:  | |||::: |   |      || ||    :   | | :
Db    1458 CUAAAGGAUGACUUACUGAUUAGCAAGUUUAGUCUCGGUUCGAAAACGGUGUGCCAGCAU 1517

Qy    1520 ATTTGGGATGAGGTGGGCAAATTTTTTGGAAACGTTTTCCCCACTATCAAAGAGAGATTG 1579
            : :||||:||| :          :::|| ||||  :: ||| |  : ||||||||| :
Db    1518 GUGUGGGAUGAGAUUUCGCUGGCGUUUGGGAACGCAUUUCCCUCCGUGAAAGAGAGACUC 1577

Qy    1580 GTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTGAAGATCAAGATCCCAGATCTG 1639
            :|| ||||||| :: :    |:    |   | ||  :  |||:|| | : || ||:|:
Db    1578 UUGAACAGGAAACUUAUCAGAGUGGCAGGCGACGCAUUAGAGAUCAGGGUGCCUGAUCUA 1637

Qy    1640 TATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACCAAGTCTGAGGAGTTACCGCAT 1699
           :|:|: || :   | ||||| :: |:  |:|| :|||     :|:| |||  : ||
Db    1638 UAUGUGACCUUCCACGACAGAUUAGUGACUGAGUACAAGGCCUCUGUGGACAUGCCUGCG 1697

Qy    1700 CTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATGTACGACGCGTTATCAGAATTA 1759
           |: || |: | |||| |  : |||||| | ||    |:|:|| | ||  : :|||| ::|
Db    1698 CUUGACAUUAGGAAGAAGAUGGAAGAAACGGAAGUGAUGUACAAUGCACUUUCAGAGUUA 1757

Qy    1760 TCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAGTTCAAAGACATGTGCAAGGCT 1819
           :|  :  : | ||   |:|| || ::|||: : |     ::     | |:|:|| |  |:
Db    1758 UCGGUGUUAAGGGAGUCUGACAAAUUCGAUGUUGAUGUUUUUUCCCAGAUGUGCCAAUCU 1817

Qy    1820 TTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTTGCAGTGGCCGAGAATAGAAGC 1879
           :: || |::   ||      ||||||    |: |: |: || |:       ||:   |||
Db    1818 UUGGAAGUUGACCCAAUGACGGCAGCGAAGGUUAUAGUCGCGGUCAUGAGCAAUGAGAGC 1877

Qy    1880 GGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAATGTGGCTAAGGCTCT------T 1933
           ||: : ||:|: || :::||    || || |||| |||:|: ||    ||: :      :
Db    1878 GGUCUGACUCUCACAUUUGAACGACCUACUGAGGCGAAUGUUGCGCUAGCUUUACAGGAU 1937

Qy    1934 AAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCGACATCCGAAGAGGTGAACGTA 1993
            ||   | ||| :| || |  |   :     ::    | | |   |  || |
Db    1938 CAAGAGAAGGCUUCAGAAGGUGCAUUGGUAGUUACCUCAAGAGAAGUUGAAGAACCGUCC 1997

Qy    1994 AATAAATTTTCTATTGCTGAGAAAGGGAGATTGCCTGTGTGTGCAGAAAGTCATGGTTTG 2053
           |  ||   ::| |: ||      || |  |      |   |:   |   |  |:  :  |
Db    1998 AUGAAGGGUUCGAUGGCCAGAGGAGAGUUACAAUUAGCUGGUCUUGCUGGAGAUCAUCCG 2057

Qy    2054 ACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTCAACGATTTCCATAAGGCTTGC 2113
             |    |  | :   || || ||||| : |||:|  :  |  | :: ||:| |||
Db    2058 GAGUCGUCCUAUUCUAAGAACGAGGAGAUAGAGUCUUUAGAGCAGUUUCAUAUGGCGACG 2117

Qy    2114 GTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTCTACACTGGCTCACTCAAAGTT 2173
           |  ||:    : |::   ||||| |:|   :|| ::|: :|||| ||  |  : ||||::
Db    2118 GCAGAUUCGUUAAUUCGUAAGCAGAUGAGCUCGAUUGUGUACACGGGUCCGAUUAAAGUU 2177

Qy    2174 CAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCGTTGTCCGCCACTGTATCAAAT 2233
           || ||||:||| |||: : : || ||  :|| ||| :|  : :| ||  | |: :| ||:
Db    2178 CAGCAAAUGAAAAACUUUAUCGAUAGCCUGGUAGCAUCACUAUCUGCUGCGGUGUCGAAU 2237

Qy    2234 CTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCTGATTCCAGGGAGAAAGTTGGT 2293
           |:   ||||   |: || ||:  ||  |    :||   :||  || |  | ||  ::||
Db    2238 CUCGUCAAGAUCCUCAAAGAUACAGCUGCUAUUGACCUUGAAACCCGUCAAAAGUUUGGA 2297

Qy    2294 GTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCTGCGGCCAAAGGTCATTCATGG 2353
           |: : |||:|:  | :  |  |||:|| :  :||||||  |||||||  |:||: ||:||
Db    2298 GUCUUGGAUGUUGCAUCUAGGAAGUGGUUAAUCAAACCAACGGCCAAGAGUCAUGCAUGG 2357
```

```
Qy        2354 GGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCACTTCTATCTTATGAAGGAGAT 2413
               || |::|:        ||  | ||||      :   || |:: :    :|:|| |   |
Db        2358 GGUGUUGUUGAAACCCACGCGAGGAAGUAUCAUGUGGCGCUUUUGGAAUAUGAUGAGCAG 2417

Qy        2414 AGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTATCATCTGATACAATGGTATAT 2473
                |  :||:|||       || :|||| || |: ||:|:  :|:||  |  : |: :|:
Db        2418 GGUGUGGUGACAUGCGAUGAUUGGAGAAGAGUAGCUGUUAGCUCUGAGUCUGUUGUUUAU 2477

Qy        2474 TCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATGAGAGACGGTGAACCCCACGAA 2533
               :| || |: || || |:|  || :|:| | | |    :  || |||| ||||| || |
Db        2478 UCCGACAUGGCGAAACUCAGAACUCUGCGCAGACUGCUUCGAAACGGAGAACCGCAUGUC 2537

Qy        2534 CCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGTTGTGGAAAGTACAAAGGAGAT 2593
                 :|  |||||| : |: |::|:||| || |: || || :|:|||||   ||||| |  :
Db        2538 AGUAGCGCAAAGGUUGUUCUUGUGGACGGAGUUCCGGGCUGUGGAAAAACCAAAGAAAUU 2597

Qy        2594 TTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTTCCTGGAAAACAAGCTGCTGCT 2653
                ::   ||  :: |: ::||:|| ||: : |: :: |: ||:|| || ||||| || |
Db        2598 CUUUCCAGGGUUAAUUUUGAUGAAGAUCUAAUUUUAGUACCUGGGAAGCAAGCCGCGGAA 2657

Qy        2654 ATGATCAGAAGAAGGGCTAATTCATCTGGACTGATAAGAGCCACAATGGACAATGTGAGA 2713
               |:||:||||||| | || ||::| :| ||  : |:    ||||| | |||||| |: | |
Db        2658 AUGAUCAGAAGACGUGCGAAUUCCUCAGGGAUUAUUGUGGCCACGAAGGACAACGUUAAA 2717

Qy        2714 ACGGTAGATTCACTTCTAATGCAT---------CCAAAACCGCGATCACACAAGAGGCTT 2764
               || |: ||::|  :  : |:| |:            | ||   |      ||||||| :
Db        2718 ACCGUUGAUUCUUUCAUGAUGAAUUUUGGGAAAAGCACACGCUGUCAGUUCAAGAGGUUA 2777

Qy        2765 TTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTTAACTTCCTGGTGCTTATCTCT 2824
               :: |::||:||||||::||:| :||| || ||::|:|::|| :: |: |:|   |: :|
Db        2778 UUCAUUGAUGAAGGGUUGAUGUUGCAUACUGGUUGUGUUAAUUUUCUUGUGGCGAUGUCA 2837

Qy        2825 GGTTGCGACATCGCATACATTTACGGAGATACACAGCAGATTCCTTTCATTAACAGAGTT 2884
                  :|||| |: |||:|  :::||||||| ||||||||||::|| : ||: || ||||::
Db        2838 UUGUGCGAAAUUGCAUAUGUUUACGGAGACACACAGCAGAUUCCAUACAUCAAUAGAGUU 2897

Qy        2885 CAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAAGTGGATGAAGTTGAGATGAGG 2944
                     ::||||:| |||   ||::::|  ||  :| |||: || || |: ||||   |
Db        2898 UCAGGAUUCCCGUACCCCGCCCAUUUUGCCAAAUUGGAAGUUGACGAGGUGGAGACACGC 2957

Qy        2945 AGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTCCTACAATCGAAGTACGAAGGA 3004
               || || || |:  | :| ||||  ||:|: |    ::  |:  |   ||  :| || ||
Db        2958 AGAACUACUCUCCGUUGUCCAGCCGAUGUCACACAUUAUCUGAACAGGAGAUAUGAGGGC 3017

Qy        3005 GCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCATCTGAGATGATAGGCGGTAAG 3064
                  |: |  | |||::|  | |:  ||   :| |: :|    ||||:| : |||||
Db        3018 UUUGUCAUGAGCACUUCUUCGGUUAAAAAGUCUGUUUCGCAGGAGAUGGUCGGCGGAGCC 3077

Qy        3065 GGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGGAAAATTGTAACTTTCACTCAGGCT 3124
               |  |:  : ||     : :| |||||  :  | || || |:  :|  ::: || ||  |
Db        3078 GCCGUGAUCAAUCCGAUCUCAAAACCCUUGCAUGGCAAGAUCCUGACUUUUACCCAAUCG 3137

Qy        3125 GATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTGAACACCGTTCATGAGATCCAA 3184
               ||:|||   |   :       |  || :|:    |:|:  |||| |: ||:||  : |||
Db        3138 GAUAAAGAAGCUCUGCUUUCAAGAGGGUAUUCAGAUGUUCACACUGUGCAUGAAGUGCAA 3197

Qy        3185 GGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACGGCAACTCCACTGACTCTGATT 3244
               || || || :     ||:|: :| |: |: || :: ||  | || ||| :   |  : |::
Db        3198 GGCGAGACAUACUCUGAUGUUUCACUAGUUAGGUUAACCCCUACACCAGUCUCCAUCAUU 3257

Qy        3245 TCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGACACACAAAGAGCTTCAAATAT 3304
                |         ||| ||:|:: : |:|||  :| | || |||||        : ||| :|
Db        3258 GCAGGAGACAGCCCACAUGUUUUGGUCGCAUUGUCAAGGCACACCUGUUCGCUCAAGUAC 3317

Qy        3305 TACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGTGATTTGTCTTCTTTAAGCTCC 3364
               :|||| |: |:  : ||:||:::||:    |: |::|| ||: :          : |||:|
Db        3318 UACACUGUUGUUAUGGAUCCUUUAGUUAGUAUCAUUAGAGAUCUAGAGAAACUUAGCUCG 3377

Qy        3365 TTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGATAGCAATTACAGATGGATGCA 3424
               : | : ::||| |:|:|:|: ||: || ||||| |    |:|||||::|||||: ||  |
Db        3378 UACUUGUUAGAUAUGUAUAAGGUCGAUGCAGGAACACAAUAGCAAUUACAGAUUGACUCG 3437

Qy        3425 GTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAATCAGGAGACTTTCCAGATCTA 3484
               |:|::||||||:   ||:|: :::|: ||| | || ||  | || ||  :: | ||: :
Db        3438 GUGUUCAAAGGUUCCAAUCUUUUUGUUGCAGCGCCAAAGACUGGUGAUAUUUCUGAUAUG 3497

Qy        3485 CAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACTATACTTAACAAGTATGATGCT 3544
               |||:: :| :| ||:   :| |:||| || || || || |:  : || ||  : :||:||:
Db        3498 CAGUUUUACUAUGAUAAGUGUCUCCCAGGCAACAGCACCAUGAUGAAUAAUUUUGAUGCU 3557

Qy        3545 GTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAGGATTGTGTTCTTGATTTTTCC 3604
               |::||||:||||::   :|| | :    : ||:|: || ||::|  :  :  ||: : :|
Db        3558 GUUACCAUGAGGUUGACUGACAUUUCAUUGAAUGUCAAAGAUUGCAUAUUGGAUAUGUCU 3617

Qy        3605 AAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTAGAGCCAGTTTTGCGTACCGCG 3664
               ||   : ::|    ||| |||||    |    |   |:|   ||  :  : || || |||
Db        3618 AAGUCUGUUCGUGCGCCUAAGGAUCAAAUCAAACCACUAAUACCUAUGGUACGAACGGCG 3677

Qy        3665 GCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTGGTTGCAATGATTAAAAGAAAT 3724
               || |||  |||| |     | ||||:| : |||||: : |: || |:||::||||||||
Db        3678 GCAGAAAUGCCACGCCAGACUGGACUAUUGGAAAAUUUAGUGGCGAUGAUUAAAAGAAAC 3737

Qy        3725 TTCAACGCACCAGACCTGACGGGGACGATTGACATTGAGAGCACCGCATCTGTTGTAGTA 3784
               :: ||||||||| ||  :| | || |  |::|| |::|| |  || |||:|: : |: |:|
Db        3738 UUUAACGCACCCGAGUUGUCUGGCAUCAUUGAUAUUGAAAAUACUGCAUCUUUGGUUGUA 3797

Qy        3785 GATAAGTTTTTTGATAGCTATTTTATTAAAAAAGAAAAATACACAAAAAATATTGCTGGA 3844
               ||:|||::::::||:|| :|:::  ::||| || ||| | |  |||| || | :| :
Db        3798 GAUAAGUUUUUUGAUAGUUAUUUGCUUAAAGAAAAAAGAAAACCAAAUAAAAAUGUUUCU 3857

Qy        3845 GTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAACAGGAAAGAAGTACTATTGGAC 3904
                :| : |  |  || :|  : |  |||:||:: |||||   | || | |:||  | : | |
Db        3858 UUGUUCAGUAGAGAGUCUCUCAAUAGAUGGUUAGAAAAGCAGGAACAGGUAACAAUAGGC 3917

Qy        3905 GACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATCGATCAGTACAAGCACATGATC 3964
                |  : ||  | :   |::::   ||: :||| ||  : ||:|||:|||  ||||:||:
Db        3918 CAGCUCGCAGAUUUUGAUUUUGUGGAUUUGCCAGCAGUUGAUCAGUACAGACACAUGAUU 3977

Qy        3965 AAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAGAATGAATACCCTGCTCTGCAA 4024
               || || ||||| ||||| || ::||||  ::|||: || |   || :|||| ||: :|||
Db        3978 AAAGCACAACCCAAACAAAAGUUGGACACUUCAAUCCAAACGGAGUACCCGGCUUUGCAG 4037

Qy        4025 ACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTGGCCGGTTTCTCA---GAGCTT 4081
               || |::|: :||||::| ||  |||:||| |  |: :: | |   :: :     ||||::
Db        4038 ACGAUUGUGUACCAUUCAAAAAAGAUCAAUGCAAUAUUCGGCCCGUUGUUUAGUGAGCUU 4097

Qy        4082 ACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTTCTTTTCTTTACTAGGAAAACT 4141
               || |||    : |: ||     ::||::| |  |  ::: : :: :: || || || ||
Db        4098 ACUAGGCAAUUACUGGACAGUGUUGAUUCGAGCAGAUUUUUGUUUUUCACAAGAAAGACA 4157

Qy        4142 CCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCGCACGTTCCTATGGATGTGTTA 4201
               ||||  ||||:: | || :: ::|   ||:|:||||   || |: || |:|||:|: ::
Db        4158 CCAGCGCAGAUUGAGGAUUUCUUCGGAGAUCUCGACAGUCAUGUGCCGAUGGAUGUCUUG 4217

Qy        4202 GAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAGTTTCATTGTGCTGTAGAGTAT 4261
               || |:|||:|: :| || :| || || :| ||||| || :: || :|:|| |:||| :|
Db        4218 GAGCUGGAUAUAUCAAAAUACGACAAAUCUCAGAAUGAAUUCCACUGUGCAGUAGAAUAC 4277

Qy        4262 GAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCCGAAGTGTGGAAACAAGGGCAC 4321
               || |: :||  ||||::|||: :  | || :: ::||  ||||: :|||||||||||||
Db        4278 GAGAUCUGGCGAAGAUUGGGUUUUGAAGACUUCUUGGGAGAAGUUUGGAAACAAGGGCAU 4337

Qy        4322 AGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAGACATGTCTGTGGTATCAAAGG 4381
               || || || ||  : |||||::| |  || || |: || || :|  : :||:|:|||||
Db        4338 AGAAAGACCACCCUCAAGGAUUAUACCGCAGGUAUAAAAACUUGCAUCUGGUAUCAAAGA 4397

Qy        4382 AAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTTATAATAGCAGCTTGCTTGGGT 4441
               || ||||| || |: || ||  ::||: || || ||:|: |: |: || || :| ::||
Db        4398 AAGAGCGGGGACGUCACGACGUUCAUUGGAAACACUGUGAUCAUUGCUGCAUGUUUGGCC 4457

Qy        4442 TCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTTTGTGGAGACGATTCCGTTTTG 4501
               :|  :| : ||||:||| ||  : |: |||||| || ::::| || |||||:    :  :|
Db        4458 UCGAUGCUUCCGAUGGAGAAAAUAAUCAAAGGAGCCUUUUGCGGUGACGAUAGUCUGCUG 4517

Qy        4502 TATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCATGTGCTAATCTCATGTGGAAT 4561
```

```
                 :| :::||||||||::  || ::  || ||  : ||    :  || ||:|: |:|:||||:
Db          4518 UACUUUCCAAAGGGUUGUGAGUUUCCGGAUGUGCAACACUCCGCGAAUCUUAUGUGGAAU 4577

Qy          4562 TTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTTTGTGGTAGATACATCATACAC 4621
                 :::|| || ||||:|: :| |||   |:| || :||::::| || |||:|  : |:|||
Db          4578 UUUGAAGCAAAACUGUUUAAAAAACAGUAUGGAUACUUUUGCGGAAGAUAUGUAAUACAU 4637

Qy          4622 CATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAGTTGATCTCCAAACTTGGGGCA 4681
                 || || |  |||   |: |:|:|::| ||:||  : |||::||:|:| ||||::|| ||
Db          4638 CACGACAGAGGAUGCAUUGUGUAUUACGAUCCCCUAAAGUUGAUCUCGAAACUUGGUGCU 4697

Qy          4682 AAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGGGTGTCTTTGTGCGATGTTGCT 4741
                 ||||| |:||||||::  || |||:: || |||:: ||   |:|: : :| ||:|::||:
Db          4698 AAACACAUCAAGGAUUGGGAACACUUGGAGGAGUUCAGAAGGUCUCUUUGUGAUGUUGCU 4757

Qy          4742 TGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTGAACGCAGCTATCAAGGAGGTT 4801
                   ::|| :    |||   :|       :   | ||| :| |||  ||: :   |||||::
Db          4758 GUUUCGUU---GAACAAUUGUGCGUAUUACACACAGUUGGACGACGCUGUAUGGGAGGUU 4814

Qy          4802 CATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGTGTTAACAAATTTTTGTGTGAT 4861
                 ||:|| |||||   :   ||::||:::| :: :||  |: :    || : :::|: :||:
Db          4815 CAUAAGACCGCCCCUCCAGGUUCGUUUGUUUAUAAAAGUCUGGUGAAGUAUUUGUCUGAU 4874

Qy          4862 AAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAGTCTCAGAGATACTGTCAAAAT 4921
                 ||| :: : :::|||| :::|::: :| |:|||: :   : : | ||  |  |: || |:
Db          4875 AAAGUUCUUUUUAGAAGUUUGUUUAUAGAUGGCUCUAGUUGUUAAAGGAAAAGUGAAUAU 4934

Qy          4922 TAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACTTCCGGCATTCATGACTAAGGT 4981
                  |  |||:: |: || |: :| |||  |||  |||:  : ||| |  :  :||     |:
Db          4935 CAAUGAGUUUAUCGACCUGUCAAAAAUGGAGAAGAUCUUACCGUCGAUGUUUACCCCUGU 4994

Qy          4982 CAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGCTGTTAAGAATGATAGTCTTTC 5041
                  |||||:|::|     :| |  |: || || |: |:|| :  : ||||:||     : :|
Db          4995 AAAGAGUGUUAUGUGUUCCAAAGUUGAUAAAAUAAUGGUUCAUGAGAAUGAGUCAUUGUC 5054

Qy          5042 TGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAAAGGGTATGTGTGCTTAGCTGA 5101
                  || |:  |  : |::||||| |::||  :  :: | |  || :| |: :| ::||| |
Db          5055 AGAGGUGAACCUUCUUAAAGGAGUUAAGCUUAUUGAUAGUGGAUACGUCUGUUUAGCCGG 5114

Qy          5102 TTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTGCCGTGGTGGTGTCAGTGTTTG 5161
                 :::||: |:  | || |||:||||  : || || || :|| | || ||:|: || |: :|
Db          5115 UUUGGUCGUCACGGGCGAGUGGAACUUGCCUGACAAUUGCAGAGGAGGUGUGAGCGUGUG 5174

Qy          5162 TATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAACGCTGGGTGCGTATCACGCCCC 5221
                 : : |: || || || |:| ||||     | || || || |: ||  | :|  || |  |
Db          5175 UCUGGUGGACAAAAGGAUGGAAAGAGCCGACGAGGCCACUCUCGGAUCUUACUACACAGC 5234

Qy          5222 TGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAATTATTCAATAACATCCGAGGA 5281
                  ||:   || || |  :::   :: ||| :  : || ||::|: | |:|||  || ||||
Db          5235 AGCUGCAAAGAAAAGAUUUCAGUUCAAGGUCGUUCCCAAUUAUGCUAUAACCACCCAGGA 5294

Qy          5282 TGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAAAGGAGTGGCTATGGAAGAAGG 5341
                  ||   |||  ||   :||||||: ::||: ||:|: | |   |:|   |:|  ||  ||
Db          5295 CGCGAUGAAAAACGUCUGGCAAGUUUUAGUUAAUAUUAGAAAUGUGAAGAUGUCAGCGGG 5354

Qy          5342 ATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGTAGTACATAAAAATAATGTAAG 5401
                  : |:|:||  : :|: :||||:: |: :|  : :|: : |:  |:| |||:||: :||
Db          5355 UUUCUGUCCGCUUUCUCUGGAGUUUGUGUCGGUGUGUAUUGUUUAUAGAAAUAAUAUAAA 5414

Qy          5402 AAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGGCTCGCCAATTGAACTCACTGA 5461
                 |  |||:::||| ||    |::   |  |:|| ||||||   ||| |: ||||: || ||
Db          5415 AUUAGGUUUGAGAGAGAAGAUUACAAACGUGAGAGACGGAGGGCCCAUGGAACUUACAGA 5474

Qy          5462 AAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGCTGTGAAACTCGAAAAGGTTC- 5520
                 | | |: |::|| |||::| :||| || |: || |:| |  : |  |: | |||| ::|
Db          5475 AGAAGUCGUUGAUGAGUUCAUGGAAGAUGUCCCUAUGUCGAUCAGGCUUGCAAAGUUUCG 5534

Qy          5521 -----------CGGAAAACAAAAAAGAAATGGTAGGTAATAATGTTAATAAT-------- 5561
                               |||| |   | |       ||| || ||:  :| :||:
Db          5535 AUCUCGAACCGGAAAAAAGAGUGAUGUCCGCAAAGGGAAAAAUAGUAGUAAUGAUCGGUC 5594

Qy          5562 -------AAGAAAATAAATAACAGTGGTAAGAAGGGTTTTAAAATTGAGGAAATTGAGGA 5614
                        || || |   |:|  | :| :||| |   :     ||:       |   || |
Db          5595 AGUGCCGAACAAGAACUAUAGAAAUGUUAAGGAUUUUGGAGGAAUGAGUUUUAAAAAGAA 5654

Qy          5615 TAATGTAAGTGATGACGAGT---------CTATCGCGTCATCGAGTACGTTTTAATCAAT 5665
                 :||: :||  ||:|| || :         |: :|||   |:||  : ||::::|   ||:
Db          5655 UAAUUUAAUCGAUGAUGAUUCGGAGGCUACUGUCGCCGAAUCGGAUUCGUUUUA---AAU 5711

Qy          5666 ATGCCTTATACAATCAACTCTCCGAGCCAATTTGTTTACTTATCTTCCGCTTACGCAGAT 5725
                 |:| |::| |  |:||   |:||    || :: |: : |:: :| :| || :  || ||
Db          5712 AUGUCUUACAGUAUCACUACUCCAUCUCAGUUCGUGUUCUUGUCAUCAGCGUGGGCCGAC 5771

Qy          5726 CCTGTGCAGCTGATCAATCTGTGTACAAATGCATTGGGTAACCAGTTTCAAACGCAACAA 5785
                 ||  :  || : |: ||: : :|:|| ||:|| :: || || |||:::||||| ||||||
Db          5772 CCAAUAGAGUUAAUUAAUUUAUGUACUAAUGCCUUAGGAAAUCAGUUUCAAACACAACAA 5831

Qy          5786 GCTAGGACAACAGTCCAACAGCAATTTGCGGATGCCTGGAAACCTGTGCCTAGTATGACA 5845
                 ||: | ||    |: |||   |||::    || |  :|||||||:   ||     : ||
Db          5832 GCUCGAACUGUCGUUCAAAGACAAUUCAGUGAGGUGUGGAAACCUUCACCACAAGUAACU 5891

Qy          5846 GTGAGATTTCCTGCATCGGATTTCTATGTGTATAGATATAATTCGACGCTTGATCCGTTG 5905
                 |: || :: ||:|     || ::  | |:|:| || :| ||: ||    : || ||| :
Db          5892 GUUAGGUUCCCUGACAGUGACUUUAAGGUGUACAGGUACAAUGCGGUAUUAGACCCGCUA 5951

Qy          5906 ATCACGGCGTTATTAAATAGCTTTGATACTAGAAATAGAATAATAGAGGTTGATAATCAA 5965
                  :||| ||  : ::|  :   :: || ||:|||||:||||:||:||| |::|| ||:||
Db          5952 GUCACAGCACUGUUAGGUGCAUUCGACACUAGAAAUAGAAUAAUAGAAGUUGAAAAUCAG 6011

Qy          5966 CCCGCACCGAATACTACTGAAATCGTTAACGCGACTCAGAGGGTAGACGATGCTACTGTA 6025
                  |    || |  ||: | || |   :  | || ||:|  || |:|||||| || || |:
Db          6012 GCGAACCCCACGACUGCCGAGACGUUAGAUGCUACUCGUAGAGUAGACGACGCAACGGUG 6071

Qy          6026 GCTATAAGGGCTTCAATCAATAATTTGGCTAATGAACTGGTTCGTGGAACTGGCATGTTC 6085
                 || |:||||    | |: ||:||:::       ||| :| :  | ||||| ||    :
Db          6072 GCCAUAAGGAGCGCGAUAAAUAAUUUAAUAGUAGAAUUGAUCAGAGGAACCGGAUCUUAU 6131

Qy          6086 AATCAAGCAGGCTTTGAGACTGCTAGTGGACTTGTCTGGACCACAACTCCGGCTACTTAG 6145
                 ||:|        :: ||||   |:  :||  : |: :||||| |   :|| || ||:
Db          6132 AAUCGGAGCUCUUUCGAGAGCUCUUCUGGUUUGGUUUGGACCUCUGGUCCUGCAACU--- 6188

Qy          6146 CTATTGTTGTGAGATTTCCTAAAATAAAGTCGCTGAAGACTTAAAATTCAGGTGGCTGA 6205
                  :   |: |: |   : | :|| | | |   | :   | |   ||   ||  |:||
Db          6189 -UGAGGUAGUCAAGAUGCAUAAUAAAUAACGGAUUGUGUCCGUAAUCACA-CGUGGUGCG 6246

Qy          6206 TACCAAAATCAGCAGTGGTTGTTCGTCCACTTAAATATAACGATTGTCATATCTGGATCC 6265
                 :|| | ||     ||:| :: : | :||||::|||:  || | ::|:  : :  |    |
Db          6247 UACGAUAACGCAUAGUGUUUUUCCCUCCACUUAAAUCGAAGGGUUGU-GUCUUGGAUCGC 6305

Qy          6266 AACAGTTAAACCATGTGATGGTGTATACTGTGGTATGGCGTAAAACATCGGAGAGGTTCG 6325
                     |: |||             :|:||    | | |     ||  |   ||| ||::||
Db          6306 GCGGGUCAAAUGUAUAUGGUUCAUAUACAUCCGCAGGCACGUAAUAAAGCGAGGGGUUCG 6365

Qy          6326 AATCCTCCCCTAACCGCCGGTAGCGGCCCA 6355
                 ||:|| ||| : ||| ||||:|| ||||||
Db          6366 AAUCCCCCCGUUACCCCCGGUAGGGGCCCA 6395
```

```
RESULT 5
US-08-687-559-2
; Sequence 2, Application US/08687559
; Patent No. 5955647
;  GENERAL INFORMATION:
;    APPLICANT:  Fitchen, John H.
;    APPLICANT:  Beachy, Roger N.
;    TITLE OF INVENTION:  METHOD FOR USING TOBACCO MOSAIC VIRUS TO
;    TITLE OF INVENTION:  OVERPRODUCE PEPTIDES AND PROTEINS
;    NUMBER OF SEQUENCES:  30
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  Fish & Richardson, P.C.
;      STREET:  4225 Executive Square, Suite 1400
;      CITY:  La Jolla
;      STATE:  CA
;      COUNTRY:  US
;      ZIP:  92037
;    COMPUTER READABLE FORM:
```

```
;      MEDIUM TYPE:  Diskette
;      COMPUTER:  IBM Compatible
;      OPERATING SYSTEM:  Windows95
;      SOFTWARE:  FastSEQ for Windows Version 2.0
;    CURRENT APPLICATION DATA:
;      APPLICATION NUMBER:  US/08/687,559
;      FILING DATE:  No. 5955647ember 18, 1996
;      CLASSIFICATION:  424
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:  PCT/US95/01467
;      FILING DATE:  03-FEB-1995
;    ATTORNEY/AGENT INFORMATION:
;      NAME:  Learn, June M.
;      REGISTRATION NUMBER:  31,238
;      REFERENCE/DOCKET NUMBER:  07302/011001
;    TELECOMMUNICATION INFORMATION:
;      TELEPHONE:  619-678-5070
;      TELEFAX:  619-678-5099
;  INFORMATION FOR SEQ ID NO:  2:
;    SEQUENCE CHARACTERISTICS:
;      LENGTH:  6395 base pairs
;      TYPE:  nucleic acid
;      STRANDEDNESS:  single
;      TOPOLOGY:  linear
;    MOLECULE TYPE:  Genomic DNA
;    IMMEDIATE SOURCE:
;      CLONE:  TMV
US-08-687-559-2

  Query Match             38.8%;  Score 2466.4;  DB 2;  Length 6395;
  Best Local Similarity   63.0%;  Pred. No. 0;
  Matches 4023;  Conservative    0;  Mismatches 2301;  Indels   66;  Gaps   11;

Qy          20 ACAACAACAATTAAAACAAAAACAACATATTACAAACAACAAACAACAACAATGGCACAC 79
               || |  |  |  |||  | |||||||||   |   || |   ||||  ||||||||| ||
Db          18 ACCAACAACAACAAACAACAAACAACATTACAATTACTATTTACAATTACAATGGCATAC 77

Qy          80 ATACAATCTATAATTAGCAACGCCCTTCTTGAAAGCGTGAGTGGTAAAAACACTCTCGTT 139
               | |||  |    |  |     ||  | || || |  ||  | || || ||| |  | ||
Db          78 ACACAGACAGCTACCACATCAGCTTTGCTGGACACTGTCCGAGGAAACAACTCCTTGGTC 137

Qy         140 AATGACCTTGCAAGAAGGCGCATGTACGATACGGCCGTGGAAGAATTTAACGCCCGCGAC 199
               ||||| || ||||   | ||  | ||||| || || || ||||| |||||||| || |||
Db         138 AATGATCTAGCAAAGCGTCGTCTTTACGACACAGCGGTTGAAGAGTTTAACGCTCGTGAC 197

Qy         200 CGTAGACCAAAGGTCAACTTTTCCAAAACTATTAGCGAAGAGCAAACGCTTCTAGTCTCC 259
               || || || ||||| |||||||| |||   || ||||| ||||| ||||| | | |   ||
Db         198 CGCAGGCCCAAGGTGAACTTTTCAAAAGTAATAAGCGAGGAGCAGACGCTTATTGCTACC 257

Qy         260 AACGCGTACCCGGAGTTCCAGATTACCTTTTATAATACTCAAAATGCCGTACACAGTTTG 319
                  ||||| || || ||||| ||||| |||||||| || |||||||||||| ||     |
Db         258 CGGGCGTATCCAGAATTCCAAATTACATTTTATAACACGCAAAATGCCGTGCATTCGCTT 317

Qy         320 GCTGGAGGTTTGAGAGCATTAGAATTGGAATATCTGATGCTACAAGTTCCCTATGGATCG 379
               || || || ||| || | ||||| |||||||||||||| | ||| ||||||| |||||
Db         318 GCAGGTGGATTGCGATCTTTAGAACTGGAATATCTGATGATGCAAATTCCCTACGGATCA 377

Qy         380 CCGACATATGATATAGGTGGGAACTTTGCAGCACATTTGTTCAAAGGCAGGGATTACGTG 439
                 ||| ||||| ||||| ||||| |||||| | ||| ||||||| ||  | |  || ||
Db         378 TTGACTTATGACATAGGCGGGAATTTTGCATCGCATCTGTTCAAGGGACGAGCATATGTA 437

Qy         440 CATTGCTGTATGCCCAATCTGGACATACGAGATATAATGAGGCACGAAGGACAAAAGGAC 499
               || ||||| |||||||| |||||| | ||||| || || ||| |||||||||| || || |||
Db         438 CACTGCTGCATGCCCAACCTGGACGTTCGAGACATCATGCGGCACGAAGGCCAGAAAGAC 497

Qy         500 TCAATTGAGATGTATTTGTCCAGATTGTCTCGTTCTAACAAGGTAATTCCTGAGTTTCAA 559
                  |||||  | ||  | || ||  |     |       ||   | | ||  | || |||
Db         498 AGTATTGAACTATACCTTTCTAGGCTAGAGAGAGGGGGGAAAACAGTCCCCAACTTCCAA 557

Qy         560 AGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAAGTCTGCTGCTCTAAAACTTTT 619
               | ||| || ||| |||| || ||||||  |||  | || |    |||    || |||||
Db         558 AAGGAAGCATTTGACAGATACGCAGAAATTCCTGAAGACGCTGTCTGTCACAATACTTTC 617

Qy         620 CAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGAAGATACGCTGTTGCTCTGCAC 679
               |||      |||   || |||    || |    || |||   || ||  |||| || |||
Db         618 CAGACAATGCGACATCAGCCGATGCAGCAATCAGGCAGAGTGTATGCCATTGCGCTACAC 677

Qy         680 AGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCGTTAATATCTAAGAATATACAT 739
               ||  | ||||| || || |   ||||||| || || ||  |  |    || ||| | |||
Db         678 AGCATATATGACATACCAGCCGATGAGTTCGGGGCGGCACTCTTGAGGAAAAATGTCCAT 737

Qy         740 GTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTACTAGACCAGACGGAGGTTACG 799
                  || ||||| |||| |    ||  | ||     |  | || ||  |  |  | || |
Db         738 ACGTGCTATGCCGCTTTCCACTTCTCTGAGAACCTGCTTCTTGAAGATTCATACGTCAAT 797

Qy         800 CTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGATGATGTTTCTTTTTTCTTTGCT 859
                |  | |||||   |||   |||     | || || ||  |  |  | ||||  |||||
Db         798 TTGGACGAAATCAACGCGTGTTTTTCGCGCGATGGAGACAAGTTGACCTTTTCTTTTGCA 857

Qy         860 GATGAAAGTACTTTAAATTATAGTCATAAATACAAAAATATCTTGCATTATGTAGTTAAA 919
                  || ||||||| | ||||||| ||||||  ||    |||||  |  |  | ||||    |||
Db         858 TCAGAGAGTACTCTTAATTATTGTCATAGTTATTCTAATATTCTTAAGTATGTGTGCAAA 917

Qy         920 TCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAGGAATTTTTAGTCACTAGGGTT 979
                ||||||| || || |||| ||||   |||||| | ||||| |||||||||||| || |||
Db         918 ACTTACTTCCCGGCCTCTAATAGAGAGGTTTACATGAAGGAGTTTTTAGTCACCAGAGTT 977

Qy         980 AATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTATATTCTGTACAAGAGTGTTAGA 1039
               ||||| ||||||||||| || | | | ||||||| | | || |||||||   ||||
Db         978 AATACCTGGTTTTGTAAGTTTTCTAGAATAGATACTTTTCTTTTGTACAAAGGTGTGGCC 1037

Qy        1040 CAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATGGAAGACGCCTTTGCTTACAAG 1099
               ||   | |    |||||||| ||||| |||   || ||||||||||| |    ||||||
Db        1038 CATAAAAGTGTAGATAGTGAGCAGTTTTATACTGCAATGGAAGACGCATGGCATTACAAA 1097

Qy        1100 AAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTTAGAGACACGGCTTCGGTTAAC 1159
               || ||  | || |||| |||||  || |||    || ||   ||  |  | || || ||
Db        1098 AAGACTCTTGCAATGTGCAACAGCGAGAGAATCCTCCTTGAGGATTCATCATCAGTCAAT 1157

Qy        1160 TTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCGCTGTTTGAGGGTTCTATTACC 1219
               |  ||||| || || ||||||| ||||| || |||||  | || ||   |||| |
Db        1158 TACTGGTTTCCCAAAATGAGGGATATGGTCATCGTACCATTATTCGACATTTCTTTGGAG 1217

Qy        1220 AGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGTGACTTCGTTTACACAGTGCTT 1279
               |  |  |||| |||  | |  || ||| | ||       || ||||| |  |||||||||
Db        1218 ACTAGTAAGAGGACGCGCAAGGAAGTCTTAGTGTCCAAGGATTTCGTGTTTACAGTGCTT 1277

Qy        1280 AATCATATCAGAACATATCAAGCCAAAGCGTTAACTTACCAGAACGTATTATCTTTCGTG 1339
               || || ||  ||||||| || || ||||| | || |||   || || || || || ||
Db        1278 AACCACATTCGAACATACCAGGCGAAAGCTCTTACATACGCAAATGTTTTGTCCTTTGTC 1337

Qy        1340 GAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACTGCTAGGTCTGAATGGGATGTA 1399
               || || ||  ||||  | || || || || ||||| || || ||||| ||||||||||
Db        1338 GAATCGATTCGATCGAGGGTAATCATTAACGGTGTGACAGCGAGGTCCGAATGGGATGTG 1397

Qy        1400 GATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTCTTGCAGACTAAGCTGGCTGCG 1459
               || ||| |  |  | ||| ||||||| ||||| ||   | |||| |||||||| || |
Db        1398 GACAAATCTTTGTTACAATCCTTGTCCATGACGTTTTACCTGCATACTAAGCTTGCCGTT 1457

Qy        1460 CTTCAAGACGATATAGTAATGGGAAAGTTTCGGTGCTTGGATAAGACCACTTCTGAACTT 1519
               ||  | || ||  || | ||  | |||||| |   |      || ||    |   | | |
Db        1458 CTAAAGGATGACTTACTGATTAGCAAGTTTAGTCTCGGTTCGAAAACGGTGTGCCAGCAT 1517

Qy        1520 ATTTGGGATGAGGTGGGCAAATTTTTTGGAAACGTTTTCCCCACTATCAAAGAGAGATTG 1579
                | ||||||||| |          ||||| ||||  || ||| |  | ||||||||  |
Db        1518 GTGTGGGATGAGATTTCGCTGGCGTTTGGGAACGCATTTCCCTCCGTGAAAGAGAGGCTC 1577

Qy        1580 GTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTGAAGATCAAGATCCCAGATCTG 1639
                ||| ||||||| || |    ||    |   | ||  |  |||||| | | || |||||
Db        1578 TTGAACAGGAAACTTATCAGAGTGGCAGGCGACGCATTAGAGATCAGGGTGCCTGATCTA 1637

Qy        1640 TATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACCAAGTCTGAGGAGTTACCGCAT 1699
               ||||| || |   | ||||| || ||  |||| ||||     |||| |||   | ||
Db        1638 TATGTGACCTTCCACGACAGATTAGTGACTGAGTACAAGGCCTCTGTGGACATGCCTGCG 1697

Qy        1700 CTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATGTACGACGCGTTATCAGAATTA 1759
```

```
Db        1698 CTTGACATTAGGAAGAAGATGGAAGAAACGGAAGTGATGTACAATGCACTTTCAGAGTTA 1757

Qy        1760 TCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAGTTCAAAGACATGTGCAAGGCT 1819
Db        1758 TCGGTGTTAAGGGAGTCTGACAAATTCGATGTTGATGTTTTTCCCAGATGTGCCAATCT 1817

Qy        1820 TTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTTGCAGTGGCCGAGAATAGAAGC 1879
Db        1818 TTGGAAGTTGACCCAATGACGGCAGCGAAGGTTATAGTCGCGGTCATGAGCAATGAGAGC 1877

Qy        1880 GGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAATGTGGCTAAGGCTCT------T 1933
Db        1878 GGTCTGACTCTCACATTTGAACGACCTACTGAGGCGAATGTTGCGCTAGCTTTACAGGAT 1937

Qy        1934 AAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCGACATCCGAAGAGGTGAACGTA 1993
Db        1938 CAAGAGAAGGCTTCAGAAGGTGCTTTGGTAGTTACCTCAAGAGAAGTTGAAGAACCGTCC 1997

Qy        1994 AATAAATTTTCTATTGCTGAGAAAGGGAGATTGCCTGTGTGTGCAGAAAGTCATGGTTTG 2053
Db        1998 ATGAAGGGTTCGATGGCCAGAGGAGAGTTACAATTAGCTGGTCTTGCTGGAGATCATCCG 2057

Qy        2054 ACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTCAACGATTTCCATAAGGCTTGC 2113
Db        2058 GAGTCGTCCTATTCTAAGAACGAGGAGATAGAGTCTTTAGAGCAGTTTCATATGGCAACG 2117

Qy        2114 GTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTCTACACTGGCTCACTCAAAGTT 2173
Db        2118 GCAGATTCGTTAATTCGTAAGCAGATGAGCTCGATTGTGTACACGGGTCCGATTAAAGTT 2177

Qy        2174 CAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCGTTGTCCGCCACTGTATCAAAT 2233
Db        2178 CAGCAAATGAAAAACTTTATCGATAGCCTGGTAGCATCACTATCTGCTGCGGTGTCGAAT 2237

Qy        2234 CTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCTGATTCCAGGGAGAAAGTTGGT 2293
Db        2238 CTCGTCAAGATCCTCAAAGATACAGCTGCTATTGACCTTGAAACCCGTCAAAAGTTTGGA 2297

Qy        2294 GTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCTGCGGCCAAAGGTCATTCATGG 2353
Db        2298 GTCTTGGATGTTGCATCTAGGAAGTGGTTAATCAAACCAACGGCCAAGAGTCATGCATGG 2357

Qy        2354 GGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCACTTCTATCTTATGAAGGAGAT 2413
Db        2358 GGTGTTGTTGAAACCCACGCGAGGAAGTATCATGTGGCGCTTTTGGAATATGATGAGCAG 2417

Qy        2414 AGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTATCATCTGATACAATGGTATAT 2473
Db        2418 GGTGTGGTGACATGCGATGATTGGAGAAGAGTAGCTGTCAGCTCTGAGTCTGTTGTTTAT 2477

Qy        2474 TCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATGAGAGACGGTGAACCCCACGAA 2533
Db        2478 TCCGACATGGCGAAACTCAGAACTCTGCGCAGACTGCTTCGAAACGGAGAACCGCATGTC 2537

Qy        2534 CCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGTTGTGGAAAGTACAAAGGAGAT 2593
Db        2538 AGTAGCGCAAAGGTTGTTCTTGTGGACGGAGTTCCGGGCTGTGGGAAAACCAAAGAAATT 2597

Qy        2594 TTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTTCCTGGAAAACAAGCTGCTGCT 2653
Db        2598 CTTTCCAGGGTTAATTTTGATGAAGATCTAATTTTAGTACCTGGGAAGCAAGCCGCGGAA 2657

Qy        2654 ATGATCAGAAGAAGGGCTAATTCATCTGGACTGATAAGAGCCACAATGGACAATGTGAGA 2713
Db        2658 ATGATCAGAAGACGTGCGAATTCCTCAGGGATTATTGTGGCCACGAAGGACAACGTTAAA 2717

Qy        2714 ACGGTAGATTCACTTCTAATGCAT---------CCAAAACCGCGATCACACAAGAGGCTT 2764
Db        2718 ACCGTTGATTCTTTCATGATGAATTTTGGGAAAAGCACACGCTGTCAGTTCAAGAGGTTA 2777

Qy        2765 TTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTTAACTTCCTGGTGCTTATCTCT 2824
Db        2778 TTCATTGATGAAGGGTTGATGTTGCATACTGGTTGTGTTAATTTTCTTGTGGCGATGTCA 2837

Qy        2825 GGTTGCGACATCGCATACATTTACGGAGATACACAGCAGATTCCTTTCATTAACAGAGTT 2884
Db        2838 TTGTGCGAAATTGCATATGTTTACGGAGACACACAGCAGATTCCATACATCAATAGAGTT 2897

Qy        2885 CAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAAGTGGATGAAGTTGAGATGAGG 2944
Db        2898 TCAGGATTCCCGTACCCCGCCCATTTTGCCAAATTGGAAGTTGACGAGGTGGAGACACGC 2957

Qy        2945 AGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTCCTACAATCGAAGTACGAAGGA 3004
Db        2958 AGAACTACTCTCCGTTGTCCAGCCGATGTCACACATTATCTGAACAGGAGATATGAGGGC 3017

Qy        3005 GCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCATCTGAGATGATAGGCGGTAAG 3064
Db        3018 TTTGTCATGAGCACTTCTTCGGTTAAAAAGTCTGTTTCGCAGGAGATGGTCGGCGGAGCC 3077

Qy        3065 GGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGGAAAATTGTAACTTTCACTCAGGCT 3124
Db        3078 GCCGTGATCAATCCGATCTCAAAACCCTTGCATGGCAAGATCCTGACTTTTACCCAATCG 3137

Qy        3125 GATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTGAACACCGTTCATGAGATCCAA 3184
Db        3138 GATAAAGAAGCTCTGCTTTCAAGAGGGTATTCAGATGTTCACACTGTGCATGAAGTGCAA 3197

Qy        3185 GGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACGGCAACTCCACTGACTCTGATT 3244
Db        3198 GGCGAGACATACTCTGATGTTTCACTAGTTAGGTTAACCCCTACACCAGTCTCCATCATT 3257

Qy        3245 TCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGACACACAAAGAGCTTCAAATAT 3304
Db        3258 GCAGGAGACAGCCCACATGTTTTGGTCGCATTGTCAAGGCACACCTGTTCGCTCAAGTAC 3317

Qy        3305 TACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGTGATTTGTCTTCTTTAAGCTCC 3364
Db        3318 TACACTGTTGTTATGGATCCTTTAGTTAGTATCATTAGAGATCTAGAGAAACTTAGCTCG 3377

Qy        3365 TTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGATAGCAATTACAGATGGATGCA 3424
Db        3378 TACTTGTTAGATATGTATAAGGTCGATGCAGGAACACAATAGCAATTACAGATTGACTCG 3437

Qy        3425 GTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAATCAGGAGACTTTCCAGATCTA 3484
Db        3438 GTGTTCAAAGGTTCCAATCTTTTTGTTGCAGCGCCAAAGACTGGTGATATTTCTGATATG 3497

Qy        3485 CAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACTATACTTAACAAGTATGATGCT 3544
Db        3498 CAGTTTTACTATGATAAGTGTCTCCCAGGCAACAGCACCATGATGAATAATTTTGATGCT 3557

Qy        3545 GTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAGGATTGTGTTCTTGATTTTTCC 3604
Db        3558 GTTACCATGAGGTTGACTGACATTTCATTGAATGTCAAAGATTGCATATTGGATATGTCT 3617

Qy        3605 AAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTAGAGCCAGTTTTGCGTACCGCG 3664
Db        3618 AAGTCTGTTGCTGCGCCTAAGGATCAAATCAAACCACTAATACCTATGGTACGAACGGCG 3677

Qy        3665 GCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTGGTTGCAATGATTAAAAGAAAT 3724
Db        3678 GCAGAAATGCCACGCCAGACTGGACTATTGGAAAATTTAGTGGCGATGATTAAAAGGAAC 3737

Qy        3725 TTCAACGCACCAGACCTGACGGGGACGATTGACATTGAGAGCACCGCATCTGTTGTAGTA 3784
Db        3738 TTTAACGCACCCGAGTTGTCTGGCATCATTGATATTGAAAATACTGCATCTTTAGTTGTA 3797

Qy        3785 GATAAGTTTTTTGATAGCTATTTTATTAAAAAAGAAAAATACACAAAAAATATTGCTGGA 3844
Db        3798 GATAAGTTTTTTGATAGTTATTTGCTTAAAGAAAAAAGAAAACCAAATAAAAATGTTTCT 3857

Qy        3845 GTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAACAGGAAAGAAGTACTATTGGAC 3904
Db        3858 TTGTTCAGTAGAGAGTCTCTCAATAGATGGTTAGAAAAGCAGGAACAGGTAACAATAGGC 3917
```

```
Qy          3905 GACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATCGATCAGTACAAGCACATGATC 3964
                  |  | ||  | |   ||||  |  |||| |||| ||  | |||||||||||  ||||||||
Db          3918 CAGCTCGCAGATTTTGATTTTGTAGATTTGCCAGCAGTTGATCAGTACAGACACATGATT 3977

Qy          3965 AAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAGAATGAATACCCTGCTCTGCAA 4024
                 || || |||||| || || ||||||||  |||||||| || |  || ||||| ||| |||| 
Db          3978 AAAGCACAACCCAAGCAAAAATTGGACACTTCAATCCAAACGGAGTACCCGGCTTTGCAG 4037

Qy          4025 ACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTGGCCGGTTTCTCA---GAGCTT 4081
                 || ||||| |||||||| ||  ||||||| |  || || | |   || |     ||||||
Db          4038 ACGATTGTGTACCATTCAAAAAAGATCAATGCAATATTTGGCCCGTTGTTTAGTGAGCTT 4097

Qy          4082 ACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTTCTTTTCTTTACTAGGAAAACT 4141
                 || |||    | || ||     ||||||| |  |  ||| | || || || || || || 
Db          4098 ACTAGGCAATTACTGGACAGTGTTGATTCGAGCAGATTTTTGTTTTTCACAAGAAAGACA 4157

Qy          4142 CCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCGCACGTTCCTATGGATGTGTTA 4201
                 ||||  |||||| | || || |||   ||||||||||   || || || ||||||| || 
Db          4158 CCAGCGCAGATTGAGGATTTCTTCGGAGATCTCGACAGTCATGTGCCGATGGATGTCTTG 4217

Qy          4202 GAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAGTTTCATTGTGCTGTAGAGTAT 4261
                 || ||||||||| || || || || || || ||||| || |||| || ||||| ||||| || 
Db          4218 GAGCTGGATATATCAAAATACGACAAATCTCAGAATGAATTCCACTGTGCAGTAGAATAC 4277

Qy          4262 GAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCCGAAGTGTGGAAACAAGGGCAC 4321
                 || || ||| ||||||||||  | |  | ||  |||||  ||||| ||||||||||||||| 
Db          4278 GAGATCTGGCGAAGATTGGGTTTTGAAGACTTCTTGGGAGAAGTTTGGAAACAAGGGCAT 4337

Qy          4322 AGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAGACATGTCTGTGGTATCAAAGG 4381
                 || || || ||  | |||||||| |  || || || || || ||  | ||||||||||| 
Db          4338 AGAAAGACCACCCTCAAGGATTATACCGCAGGTATAAAAACTTGCATCTGGTATCAAAGA 4397

Qy          4382 AAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTTATAATAGCAGCTTGCTTGGGT 4441
                 || ||||| || || || || ||||| || || ||||| || || || || || |||| 
Db          4398 AAGAGCGGGGACGTCACGACGTTCATTGGAAACACTGTGATCATTGCTGCATGTTTGGCC 4457

Qy          4442 TCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTTTGTGGAGACGATTCCGTTTTG 4501
                 || ||| | ||||||| ||  | || ||||| || |||| || |||||||    |  ||
Db          4458 TCGATGCTTCCGATGGAGAAAATAATCAAAGGAGCCTTTTGCGGTGACGATAGTCTGCTG 4517

Qy          4502 TATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCATGTGCTAATCTCATGTGGAAT 4561
                 || ||||||||||||||  || || || ||  | ||    |  || ||||| |||||||||
Db          4518 TACTTTCCAAAGGGTTGTGAGTTTCCGGATGTGCAACACTCCGCGAATCTTATGTGGAAT 4577

Qy          4562 TTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTTTGTGGTAGATACATCATACAC 4621
                 ||||| || ||||||| || |||   |||  || ||||||| || |||||  | ||||| 
Db          4578 TTTGAAGCAAAACTGTTTAAAAAACAGTATGGATACTTTTGCGGAAGATATGTAATACAT 4637

Qy          4622 CATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAGTTGATCTCCAAACTTGGGGCA 4681
                 || || |  |||   || ||||||| |||||  | |||||||||| ||||||||| || 
Db          4638 CACGACAGAGGATGCATTGTGTATTACGATCCCCTAAAGTTGATCTCGAAACTTGGTGCT 4697

Qy          4682 AAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGGGTGTCTTTGTGCGATGTTGCT 4741
                 ||||| ||||||||||  ||  ||||| || ||||| ||   |||| | || |||||||||
Db          4698 AAACACATCAAGGATTGGGAACACTTGGAGGAGTTCAGAAGGTCTCTTTGTGATGTTGCT 4757

Qy          4742 TGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTGAACGCAGCTATCAAGGAGGTT 4801
                   |||| |     |||   ||       |   | ||| || |||  ||| |    |||||||
Db          4758 GTTTCGTT---GAACAATTGTGCGTATTACACACAGTTGGACGACGCTGTATGGGAGGTT 4814

Qy          4802 CATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGTGTTAACAAATTTTTGTGTGAT 4861
                 ||||| |||||   |   |||||||||| || |||  || |    || | ||||| ||||
Db          4815 CATAAGACCGCCCCTCCAGGTTCGTTTGTTTATAAAAGTCTGGTGAAGTATTTGTCTGAT 4874

Qy          4862 AAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAGTCTCAGAGATACTGTCAAAAT 4921
                 ||| || | ||||||| ||||||| || ||||| |   | | | ||  |  || || ||
Db          4875 AAAGTTCTTTTTAGAAGTTTGTTTATAGATGGCTCTAGTTGTTAAAGGAAAAGTGAATAT 4934

Qy          4922 TAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACTTCCGGCATTCATGACTAAGGT 4981
                  |  ||||| || || ||  | |||  |||  ||||  | ||| |  |  | ||    ||
Db          4935 CAATGAGTTTATCGACCTGACAAAAATGGAGAAGATCTTACCGTCGATGTTTACCCCTGT 4994
```

```
Qy          4982 CAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGCTGTTAAGAATGATAGTCTTTC 5041
                  |||||||||||     || |  || || || || |||| |  | ||||||||     | ||
Db          4995 AAAGAGTGTTATGTGTTCCAAAGTTGATAAAATAATGGTTCATGAGAATGAGTCATTGTC 5054

Qy          5042 TGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAAAGGGTATGTGTGCTTAGCTGA 5101
                  || ||  |  | |||||||| |||||| |  || | |  || || || || ||||| | 
Db          5055 AGAGGTGAACCTTCTTAAAGGAGTTAAGCTTATTGATAGTGGATACGTCTGTTTAGCCGG 5114

Qy          5102 TTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTGCCGTGGTGGTGTCAGTGTTTG 5161
                 |||||| ||  | || ||||||||  | || || || ||| | || |||||| || || ||
Db          5115 TTTGGTCGTCACGGGCGAGTGGAACTTGCCTGACAATTGCAGAGGAGGTGTGAGCGTGTG 5174

Qy          5162 TATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAACGCTGGGTGCGTATCACGCCCC 5221
                 | | || || || || ||| ||||     | || || || || ||  | ||  || |  |
Db          5175 TCTGGTGGACAAAAGGATGGAAAGAGCCGACGAGGCCACTCTCGGATCTTACTACACAGC 5234

Qy          5222 TGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAATTATTCAATAACATCCGAGGA 5281
                  |||   || || |  |||   || ||| |  | || ||||| | |||||  |  || ||||
Db          5235 AGCTGCAAAGAAAAGATTTCAGTTCAAGGTCGTTCCCAATTATGCTATAACCACCCAGGA 5294

Qy          5282 TGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAAAGGAGTGGCTATGGAAGAAGG 5341
                  ||   ||| ||   |||||||| ||||| ||||| | |   |||   |||  ||  ||
Db          5295 CGCGATGAAAAACGTCTGGCAAGTTTTAGTTAATATTAGAAATGTGAAGATGTCAGCGGG 5354

Qy          5342 ATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGTAGTACATAAAAATAATGTAAG 5401
                  | |||||| | ||| ||||||| || ||  | ||| | ||  ||| || ||||| ||| 
Db          5355 TTTCTGTCCGCTTTCTCTGGAGTTTGTGTCGGTGTGTATTGTTTATAGAAATAATATAAA 5414

Qy          5402 AAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGGCTCGCCAATTGAACTCACTGA 5461
                 |  ||||||||| ||    |||   |  |||| ||||||   ||| || |||| || ||
Db          5415 ATTAGGTTTGAGAGAGAAGATTACAAACGTGAGAGACGGAGGGCCCATGGAACTTACAGA 5474

Qy          5462 AAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGCTGTGAAACTCGAAAAGGTTC- 5520
                 | | || ||||| |||||| |||| || || || ||| |  | |  || | |||| |||
Db          5475 AGAAGTCGTTGATGAGTTCATGGAAGATGTCCCTATGTCGATCAGGCTTGCAAAGTTTCG 5534

Qy          5521 -----------CGGAAAACAAAAAAGAAATGGTAGGTAATAATGTTAATAAT-------- 5561
                               |||| |   | |       ||| ||  |||  || ||||
Db          5535 ATCTCGAACCGGAAAAAAGAGTGATGTCCGCAAAGGAAAAAATAGTAGTAATGATCGGTC 5594

Qy          5562 -------AAGAAAATAAATAACAGTGGTAAGAAGGGTTTTAAAATTGAGGAAATTGAGGA 5614
                        || || |   |||  | || ||||| |   |     |||       |   || |
Db          5595 AGTGCCGAACAAGAACTATAGAAATGTTAAGGATTTTGGAGGAATGAGTTTTAAAAAGAA 5654

Qy          5615 TAATGTAAGTGATGACGAGT---------CTATCGCGTCATCGAGTACGTTTTAATCAAT 5665
                 |||| |||  ||||| || |         || ||||   ||||  | |||||||   |||
Db          5655 TAATTTAATCGATGATGATTCGGAGGCTACTGTCGCCGAATCGGATTCGTTTTA---AAT 5711

Qy          5666 ATGCCTTATACAATCAACTCTCCGAGCCAATTTGTTTACTTATCTTCCGCTTACGCAGAT 5725
                 ||| |||| |  ||||   ||||    ||  || || | ||| || || ||  || || 
Db          5712 ATGTCTTACAGTATCACTACTCCATCTCAGTTCGTGTTCTTGTCATCAGCGTGGGCCGAC 5771

Qy          5726 CCTGTGCAGCTGATCAATCTGTGTACAAATGCATTGGGTAACCAGTTTCAAACGCAACAA 5785
                 ||  |  || | || ||| | ||||| ||||| || || || |||||||||||| ||||||
Db          5772 CCAATAGAGTTAATTAATTTATGTACTAATGCCTTAGGAAATCAGTTTCAAACACAACAA 5831

Qy          5786 GCTAGGACAACAGTCCAACAGCAATTTGCGGATGCCTGGAAACCTGTGCCTAGTATGACA 5845
                 ||| | ||    || |||    |||||    || |  ||||||||   ||     | || 
Db          5832 GCTCGAACTGTCGTTCAAAGACAATTCAGTGAGGTGTGGAAACCTTCACCACAAGTAACT 5891

Qy          5846 GTGAGATTTCCTGCATCGGATTTCTATGTGTATAGATATAATTCGACGCTTGATCCGTTG 5905
                 || || || ||||     || ||  | ||||| || || |||| ||    | || ||| | 
Db          5892 GTTAGGTTCCCTGACAGTGACTTTAAGGTGTACAGGTACAATGCGGTATTAGACCCGCTA 5951

Qy          5906 ATCACGGCGTTATTAAATAGCTTTGATACTAGAAATAGAATAATAGAGGTTGATAATCAA 5965
                  |||| ||  | |||  |  |  || || |||||||||||||||||||| ||||||| ||||| 
Db          5952 GTCACAGCACTGTTAGGTGCATTCGACACTAGAAATAGAATAATAGAAGTTGAAAATCAG 6011

Qy          5966 CCCGCACCGAATACTACTGAAATCGTTAACGCGACTCAGAGGGTAGACGATGCTACTGTA 6025
                  |    || |  ||| | ||||   |  |  |  || ||||  || ||||||||| || || || 
Db          6012 GCGAACCCCACGACTGCCGAAACGTTAGATGCTACTCGTAGAGTAGACGACGCAACGGTG 6071

Qy          6026 GCTATAAGGGCTTCAATCAATAATTTGGCTAATGAACTGGTTCGTGGAACTGGCATGTTC 6085
```

```
Db        6072 GCCATAAGGAGCGCGATAAATAATTTAATAGTAGAATTGATCAGAGGAACCGGATCTTAT 6131

Qy        6086 AATCAAGCAGGCTTTGAGACTGCTAGTGGACTTGTCTGGACCACAACTCCGGCTACTTAG 6145

Db        6132 AATCGGAGCTCTTTCGAGAGCTCTTCTGGTTTGGTTTGGACCTCTGGTCCTGCAACT--- 6188

Qy        6146 CTATTGTTGTGAGATTTCCTAAAATAAAGTCGCTGAAGACTTAAAATTCAGGGTGGCTGA 6205

Db        6189 -TGAGGTAGTCAAGATGCATAATAAATAACGGATTGTGTCCGTAATCACA-CGTGGTGCG 6246

Qy        6206 TACCAAAATCAGCAGTGGTTGTTCGTCCACTTAAATATAACGATTGTCATATCTGGATCC 6265

Db        6247 TACGATAACGCATAGTGTTTTTCCCTCCACTTAAATCGAAGGGTTGT-GTCTTGGATCGC 6305

Qy        6266 AACAGTTAAACCATGTGATGGTGTATACTGTGGTATGGCGTAAAACATCGGAGAGGTTCG 6325

Db        6306 GCGGGTCAAATGTATATGGTTCATATACATCCGCAGGCACGTAATAAAGCGAGGGGTTCG 6365

Qy        6326 AATCCTCCCCTAACCGCCGGTAGCGGCCCA 6355

Db        6366 AATCCCCCCGTTACCCCCGGTAGGGGCCCA 6395


RESULT 6
US-09-401-415-2
; Sequence 2, Application US/09401415
; Patent No. 6503732
;  GENERAL INFORMATION:
;       APPLICANT: THE SCRIPPS RESEARCH INSTITUTE
;       TITLE OF INVENTION: METHOD FOR USING TOBACCO MOSAIC VIRUS TO
;                           OVERPRODUCE PEPTIDES AND PROTEINS
;       NUMBER OF SEQUENCES: 30
;       CORRESPONDENCE ADDRESS:
;            ADDRESSEE: Spensley Horn Jubas & Lubitz
;            STREET: 1880 Century Park East, Suite 500
;            CITY: Los Angeles
;            STATE: California
;            COUNTRY: USA
;            ZIP: 90067
;       COMPUTER READABLE FORM:
;            MEDIUM TYPE: Floppy disk
;            COMPUTER: IBM PC compatible
;            OPERATING SYSTEM: PC-DOS/MS-DOS
;            SOFTWARE: PatentIn Release #1.0, Version #1.25
;       CURRENT APPLICATION DATA:
;            APPLICATION NUMBER: US/09/401,415
;            FILING DATE: 21-Sep-1999
;            CLASSIFICATION: <Unknown>
;       PRIOR APPLICATION DATA:
;            APPLICATION NUMBER: PCT/US95/01467
;            FILING DATE: <Unknown>
;       ATTORNEY/AGENT INFORMATION:
;            NAME: Bostich, June M.
;            REGISTRATION NUMBER: 31,238
;            REFERENCE/DOCKET NUMBER: FD-4074
;       TELECOMMUNICATION INFORMATION:
;            TELEPHONE: (619) 455-5100
;            TELEFAX: (619) 455-5110
;  INFORMATION FOR SEQ ID NO: 2:
;       SEQUENCE CHARACTERISTICS:
;            LENGTH: 6395 base pairs
;            TYPE: nucleic acid
;            STRANDEDNESS: single
;            TOPOLOGY: linear
;       MOLECULE TYPE: DNA (genomic)
;       IMMEDIATE SOURCE:
;            CLONE: TMV
;       FEATURE:
;            NAME/KEY:  CDS
;            LOCATION:  1..6395
;       SEQUENCE DESCRIPTION: SEQ ID NO: 2:
US-09-401-415-2

  Query Match             38.8%;  Score 2466.4;  DB 4;  Length 6395;
  Best Local Similarity   63.0%;  Pred. No. 0;
  Matches 4023;  Conservative    0;  Mismatches 2301;  Indels   66;  Gaps   11;

Qy          20 ACAACAACAATTAAAACAAAAACAACATATTACAAACAACAAACAACAACAATGGCACAC 79

Db          18 ACCAACAACAACAAACAACAAACAACATTACAATTACTATTTACAATTACAATGGCATAC 77

Qy          80 ATACAATCTATAATTAGCAACGCCCTTCTTGAAAGCGTGAGTGGTAAAAACACTCTCGTT 139

Db          78 ACACAGACAGCTACCACATCAGCTTTGCTGGACACTGTCCGAGGAAACAACTCCTTGGTC 137

Qy         140 AATGACCTTGCAAGAAGGCGCATGTACGATACGGCCGTGGAAGAATTTAACGCCCGCGAC 199

Db         138 AATGATCTAGCAAAGCGTCGTCTTTACGACACAGCGGTTGAAGAGTTTAACGCTCGTGAC 197

Qy         200 CGTAGACCAAAGGTCAACTTTTCCAAAACTATTAGCGAAGAGCAAACGCTTCTAGTCTCC 259

Db         198 CGCAGGCCCAAGGTGAACTTTTCAAAAGTAATAAGCGAGGAGCAGACGCTTATTGCTACC 257

Qy         260 AACGCGTACCCGGAGTTCCAGATTACCTTTTATAATACTCAAAATGCCGTACACAGTTTG 319

Db         258 CGGGCGTATCCAGAATTCCAAATTACATTTTATAACACGCAAAATGCCGTGCATTCGCTT 317

Qy         320 GCTGGAGGTTTGAGAGCATTAGAATTGGAATATCTGATGCTACAAGTTCCCTATGGATCG 379

Db         318 GCAGGTGGATTGCGATCTTTAGAACTGGAATATCTGATGATGCAAATTCCCTACGGATCA 377

Qy         380 CCGACATATGATATAGGTGGGAACTTTGCAGCACATTTGTTCAAAGGCAGGGATTACGTG 439

Db         378 TTGACTTATGACATAGGCGGGAATTTTGCATCGCATCTGTTCAAGGGACGAGCATATGTA 437

Qy         440 CATTGCTGTATGCCCAATCTGGACATACGAGATATAATGAGGCACGAAGGACAAAAGGAC 499

Db         438 CACTGCTGCATGCCCAACCTGGACGTTCGAGACATCATGCGGCACGAAGGCCAGAAAGAC 497

Qy         500 TCAATTGAGATGTATTTGTCCAGATTGTCTCGTTCTAACAAGGTAATTCCTGAGTTTCAA 559

Db         498 AGTATTGAACTATACCTTTCTAGGCTAGAGAGAGGGGGAAAACAGTCCCCAACTTCCAA 557

Qy         560 AGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAAGTCTGCTGCTCTAAAACTTTT 619

Db         558 AAGGAAGCATTTGACAGATACGCAGAAATTCCTGAAGACGCTGTCTGTCACAATACTTTC 617

Qy         620 CAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGAAGATACGCTGTTGCTCTGCAC 679

Db         618 CAGACAATGCGACATCAGCCGATGCAGCAATCAGGCAGAGTGTATGCCATTGCGCTACAC 677

Qy         680 AGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCGTTAATATCTAAGAATATACAT 739

Db         678 AGCATATATGACATACCAGCCGATGAGTTCGGGGCGGCACTCTTGAGGAAAAATGTCCAT 737

Qy         740 GTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTACTAGACCAGACGGAGGTTACG 799

Db         738 ACGTGCTATGCCGCTTTCCACTTCTCTGAGAACCTGCTTCTTGAAGATTCATACGTCAAT 797

Qy         800 CTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGATGATGTTTCTTTTTTCTTTGCT 859

Db         798 TTGGACGAAATCAACGCGTGTTTTCGCGCGATGGAGACAAGTTGACCTTTTCTTTTGCA 857

Qy         860 GATGAAAGTACTTTAAATTATAGTCATAAATACAAAAATATCTTGCATTATGTAGTTAAA 919

Db         858 TCAGAGAGTACTCTTAATTATTGTCATAGTTATTCTAATATTCTTAAGTATGTGTGCAAA 917

Qy         920 TCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAGGAATTTTTAGTCACTAGGGTT 979

Db         918 ACTTACTTCCCGGCCTCTAATAGAGAGGTTTACATGAAGGAGTTTTTAGTCACCAGAGTT 977

Qy         980 AATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTATATTCTGTACAAGAGTGTTAGA 1039

Db         978 AATACCTGGTTTTGTAAGTTTTCTAGAATAGATACTTTTCTTTTGTACAAAGGTGTGGCC 1037
```

```
Qy           1040 CAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATGGAAGACGCCTTTGCTTACAAG 1099
                  ||   | |    |||||||| ||||| |||   || ||||||||||| |    ||||||
Db           1038 CATAAAAGTGTAGATAGTGAGCAGTTTTATACTGCAATGGAAGACGCATGGCATTACAAA 1097
Qy           1100 AAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTTAGAGACACGGCTTCGGTTAAC 1159
                  || ||  | || |||| |||||  || |||    || ||   ||  |  | || || ||
Db           1098 AAGACTCTTGCAATGTGCAACAGCGAGAGAATCCTCCTTGAGGATTCATCATCAGTCAAT 1157
Qy           1160 TTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCGCTGTTTGAGGGTTCTATTACC 1219
                  |  ||||| || || |||| ||| ||||| || |||||  | || ||   |||| |
Db           1158 TACTGGTTTCCCAAAATGAGGGATATGGTCATCGTACCATTATTCGACATTTCTTTGGAG 1217
Qy           1220 AGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGTGACTTCGTTTACACAGTGCTT 1279
                  |  |  |||| |||  | |  || ||| | ||       || ||||| |  |||||||||
Db           1218 ACTAGTAAGAGGACGCGCAAGGAAGTCTTAGTGTCCAAGGATTTCGTGTTTACAGTGCTT 1277
Qy           1280 AATCATATCAGAACATATCAAGCCAAAGCGTTAACTTACCAGAACGTATTATCTTTCGTG 1339
                  || || ||  ||||||| || || |||||  | || |||   || || || || || ||
Db           1278 AACCACATTCGAACATACCAGGCGAAAGCTCTTACATACGCAAATGTTTTGTCCTTTGTC 1337
Qy           1340 GAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACTGCTAGGTCTGAATGGGATGTA 1399
                  || || ||  ||||  | || || || || ||||| || || ||||| |||||||||||
Db           1338 GAATCGATTCGATCGAGGGTAATCATTAACGGTGTGACAGCGAGGTCCGAATGGGATGTG 1397
Qy           1400 GATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTCTTGCAGACTAAGCTGGCTGCG 1459
                  || ||| |  |  | ||| ||||||| ||||| || | | |||| |||||||| || |
Db           1398 GACAAATCTTTGTTACAATCCTTGTCCATGACGTTTTACCTGCATACTAAGCTTGCCGTT 1457
Qy           1460 CTTCAAGACGATATAGTAATGGGAAAGTTTCGGTGCTTGGATAAGACCACTTCTGAACTT 1519
                  ||  | || ||  || | ||  | |||||| |   |      || ||    |   | | |
Db           1458 CTAAAGGATGACTTACTGATTAGCAAGTTTAGTCTCGGTTCGAAAACGGTGTGCCAGCAT 1517
Qy           1520 ATTTGGGATGAGGTGGGCAAATTTTTTGGAAACGTTTTCCCCACTATCAAAGAGAGATTG 1579
                   | ||||||||| |          ||||| ||||  || ||| |  | ||||||||  |
Db           1518 GTGTGGGATGAGATTTCGCTGGCGTTTGGGAACGCATTTCCCTCCGTGAAAGAGAGGCTC 1577
Qy           1580 GTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTGAAGATCAAGATCCCAGATCTG 1639
                   ||| ||||||| || |    ||    |   | ||  |  |||||| | | || |||||
Db           1578 TTGAACAGGAAACTTATCAGAGTGGCAGGCGACGCATTAGAGATCAGGGTGCCTGATCTA 1637
Qy           1640 TATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACCAAGTCTGAGGAGTTACCGCAT 1699
                  ||||| || |   | ||||| || ||  |||| ||||     |||| |||  | ||
Db           1638 TATGTGACCTTCCACGACAGATTAGTGACTGAGTACAAGGCCTCTGTGGACATGCCTGCG 1697
Qy           1700 CTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATGTACGACGCGTTATCAGAATTA 1759
                  || || || | |||| |  | |||||| | ||    |||||| | ||  | ||||| |||
Db           1698 CTTGACATTAGGAAGAAGATGGAAGAAACGGAAGTGATGTACAATGCACTTTCAGAGTTA 1757
Qy           1760 TCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAGTTCAAAGACATGTGCAAGGCT 1819
                  ||  |  | | ||   |||| || |||||| | |     ||     | |||||| |  ||
Db           1758 TCGGTGTTAAGGGAGTCTGACAAATTCGATGTTGATGTTTTTTCCCAGATGTGCCAATCT 1817
Qy           1820 TTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTTGCAGTGGCCGAGAATAGAAGC 1879
                  || || |||   ||      ||||||    || || || || ||       |||   |||
Db           1818 TTGGAAGTTGACCCAATGACGGCAGCGAAGGTTATAGTCGCGGTCATGAGCAATGAGAGC 1877
Qy           1880 GGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAATGTGGCTAAGGCTCT------T 1933
                  ||| | ||||| || |||||    || || |||| ||||||.||    ||| |      |
Db           1878 GGTCTGACTCTCACATTTGAACGACCTACTGAGGCGAATGTTGCGCTAGCTTTACAGGAT 1937
Qy           1934 AAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCGACATCCGAAGAGGTGAACGTA 1993
                   ||   | ||| || || |  |   |     ||    | | |   |  || |
Db           1938 CAAGAGAAGGCTTCAGAAGGTGCTTTGGTAGTTACCTCAAGAGAAGTTGAAGAACCGTCC 1997
Qy           1994 AATAAATTTTCTATTGCTGAGAAAGGGAGATTGCCTGTGTGTGCAGAAAGTCATGGTTTG 2053
                  |  ||   ||| || ||      || |  |      |   ||   |   |  ||  |  |
Db           1998 ATGAAGGGTTCGATGGCCAGAGGAGAGTTACAATTAGCTGGTCTTGCTGGAGATCATCCG 2057
Qy           2054 ACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTCAACGATTTCCATAAGGCTTGC 2113
                    |    |  | |   || || ||||| | |||||  |  |  | || |||| |||
Db           2058 GAGTCGTCCTATTCTAAGAACGAGGAGATAGAGTCTTTAGAGCAGTTTCATATGGCAACG 2117
Qy           2114 GTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTCTACACTGGCTCACTCAAAGTT 2173

                  |  |||    | |||   ||||| |||   ||| |||| ||||| ||  |  | ||||||
Db           2118 GCAGATTCGTTAATTCGTAAGCAGATGAGCTCGATTGTGTACACGGGTCCGATTAAAGTT 2177
Qy           2174 CAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCGTTGTCCGCCACTGTATCAAAT 2233
                  || ||||||||| |||| | | || ||  ||| ||| ||  | || ||    || || |||
Db           2178 CAGCAAATGAAAAACTTTATCGATAGCCTGGTAGCATCACTATCTGCTGCGGTGTCGAAT 2237
Qy           2234 CTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCTGATTCCAGGGAGAAAGTTGGT 2293
                  ||   ||||   || || |||  ||  |    |||   |||  || |  | ||  ||||
Db           2238 CTCGTCAAGATCCTCAAAGATACAGCTGCTATTGACCTTGAAACCCGTCAAAAGTTTGGA 2297
Qy           2294 GTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCTGCGGCCAAAGGTCATTCATGG 2353
                  || | ||||||  | |  |  |||||| |  |||||||  |||||||  ||||| |||||
Db           2298 GTCTTGGATGTTGCATCTAGGAAGTGGTTAATCAAACCAACGGCCAAGAGTCATGCATGG 2357
Qy           2354 GGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCACTTCTATCTTATGAAGGAGAT 2413
                  || |||||        ||  | ||||      |   || ||| |    ||||| |   |
Db           2358 GGTGTTGTTGAAACCCACGCGAGGAAGTATCATGTGGCGCTTTTGGAATATGATGAGCAG 2417
Qy           2414 AGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTATCATCTGATACAATGGTATAT 2473
                   |  |||||||       || ||||| || || |||||    |||||  |  | || |||
Db           2418 GGTGTGGTGACATGCGATGATTGGAGAAGAGTAGCTGTCAGCTCTGAGTCTGTTGTTTAT 2477
Qy           2474 TCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATGAGAGACGGTGAACCCCACGAA 2533
                  || || || || || |||  || |||| | | |    |  || |||| ||||| || |
Db           2478 TCCGACATGGCGAAACTCAGAACTCTGCGCAGACTGCTTCGAAACGGAGAACCGCATGTC 2537
Qy           2534 CCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGTTGTGGAAAGTACAAAGGAGAT 2593
                    ||  |||||| | || |||||||| || || || || ||||| ||   ||||| |  |
Db           2538 AGTAGCGCAAAGGTTGTTCTTGTGGACGGAGTTCCGGGCTGTGGGAAAACCAAAGAAATT 2597
Qy           2594 TTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTTCCTGGAAAACAAGCTGCTGCT 2653
                   ||   ||  || || |||||||| ||| || || || |||| || ||||| || |
Db           2598 CTTTCCAGGGTTAATTTTGATGAAGATCTAATTTTAGTACCTGGGAAGCAAGCCGCGGAA 2657
Qy           2654 ATGATCAGAAGAAGGGCTAATTCATCTGGACTGATAAGAGCCACAATGGACAATGTGAGA 2713
                  |||||||||||| | || ||||| || ||  | ||    ||||| | |||||| || | |
Db           2658 ATGATCAGAAGACGTGCGAATTCCTCAGGGATTATTGTGGCCACGAAGGACAACGTTAAA 2717
Qy           2714 ACGGTAGATTCACTTCTAATGCAT---------CCAAAACCGCGATCACACAAGAGGCTT 2764
                  || || |||||  |  | ||| ||            | ||   |      ||||||| |
Db           2718 ACCGTTGATTCTTTCATGATGAATTTTGGGAAAAGCACACGCTGTCAGTTCAAGAGGTTA 2777
Qy           2765 TTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTTAACTTCCTGGTGCTTATCTCT 2824
                  || |||||||||||||||||| |||| || ||||||||||| || || |||   || ||
Db           2778 TTCATTGATGAAGGGTTGATGTTGCATACTGGTTGTGTTAATTTTCTTGTGGCGATGTCA 2837
Qy           2825 GGTTGCGACATCGCATACATTTACGGAGATACACAGCAGATTCCTTTCATTAACAGAGTT 2884
                     ||||| || |||||  |||||||||| |||||||||||||| | ||| || ||||||
Db           2838 TTGTGCGAAATTGCATATGTTTACGGAGACACACAGCAGATTCCATACATCAATAGAGTT 2897
Qy           2885 CAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAAGTGGATGAAGTTGAGATGAGG 2944
                        |||||||| |||   |||||||  ||  || |||| || || || ||||   |
Db           2898 TCAGGATTCCCGTACCCCGCCCATTTTGCCAAATTGGAAGTTGACGAGGTGGAGACACGC 2957
Qy           2945 AGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTCCTACAATCGAAGTACGAAGGA 3004
                  || || || ||  | || ||||  ||||| |    ||  ||  |   ||  || || ||
Db           2958 AGAACTACTCTCCGTTGTCCAGCCGATGTCACACATTATCTGAACAGGAGATATGAGGGC 3017
Qy           3005 GCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCATCTGAGATGATAGGCGGTAAG 3064
                     || |  | ||||||  | ||  ||   || || ||    |||||| | |||||
Db           3018 TTTGTCATGAGCACTTCTTCGGTTAAAAAGTCTGTTTCGCAGGAGATGGTCGGCGGAGCC 3077
Qy           3065 GGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGAAAAATTGTAACTTTCACTCAGGCT 3124
                  |  ||  | |      | || |||||  |  | || || ||  | ||||| || ||  |
Db           3078 GCCGTGATCAATCCGATCTCAAAACCCTTGCATGGCAAGATCCTGACTTTTACCCAATCG 3137
Qy           3125 GATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTGAACACCGTTCATGAGATCCAA 3184
                  ||||||   |   |       |  || |||    ||||  |||| || |||||  | |||
Db           3138 GATAAAGAAGCTCTGCTTTCAAGAGGGTATTCAGATGTTCACACTGTGCATGAAGTGCAA 3197
Qy           3185 GGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACGGCAACTCCACTGACTCTGATT 3244
                  || || || |     ||||| || || || || || ||  | || ||| |  |  | |||
```

```
Db        3198 GGCGAGACATACTCTGATGTTTCACTAGTTAGGTTAACCCCTACACCAGTCTCCATCATT 3257

Qy        3245 TCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGACACACAAAGAGCTTCAAATAT 3304
                |         ||| |||||| | |||||  || | || |||||        |||| ||
Db        3258 GCAGGAGACAGCCCACATGTTTTGGTCGCATTGTCAAGGCACACCTGTTCGCTCAAGTAC 3317

Qy        3305 TACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGTGATTTGTCTTCTTTAAGCTCC 3364
               ||||| || ||  | |||||||||||    || ||||| ||| |        | |||||
Db        3318 TACACTGTTGTTATGGATCCTTTAGTTAGTATCATTAGAGATCTAGAGAAACTTAGCTCG 3377

Qy        3365 TTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGATAGCAATTACAGATGGATGCA 3424
               | | | ||||| ||||||| ||| || ||||| |    ||||||||||||||| ||  |
Db        3378 TACTTGTTAGATATGTATAAGGTCGATGCAGGAACACAATAGCAATTACAGATTGACTCG 3437

Qy        3425 GTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAATCAGGAGACTTTCCAGATCTA 3484
               ||||||||||||   ||||| ||||| ||| | || ||  | || ||  || | ||| |
Db        3438 GTGTTCAAAGGTTCCAATCTTTTTGTTGCAGCGCCAAAGACTGGTGATATTTCTGATATG 3497

Qy        3485 CAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACTATACTTAACAAGTATGATGCT 3544
               ||||| || || |||   || ||||| || || || || ||  | || || | |||||||
Db        3498 CAGTTTTACTATGATAAGTGTCTCCCAGGCAACAGCACCATGATGAATAATTTTGATGCT 3557

Qy        3545 GTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAGGATTGTGTTCTTGATTTTTCC 3604
               ||||||||||||||   ||| | |    | ||||| || |||||  |  | ||| | ||
Db        3558 GTTACCATGAGGTTGACTGACATTTCATTGAATGTCAAAGATTGCATATTGGATATGTCT 3617

Qy        3605 AAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTAGAGCCAGTTTTGCGTACCGCG 3664
               ||   | || |   ||| |||||    |    |   |||   ||  |  | || || |||
Db        3618 AAGTCTGTTGCTGCGCCTAAGGATCAAATCAAACCACTAATACCTATGGTACGAACGGCG 3677

Qy        3665 GCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTGGTTGCAATGATTAAAAGAAAT 3724
               || |||  |||| |     | |||||| | |||||| | || || ||||||||||| ||
Db        3678 GCAGAAATGCCACGCCAGACTGGACTATTGGAAAATTTAGTGGCGATGATTAAAAGGAAC 3737

Qy        3725 TTCAACGCACCAGACCTGACGGGGACGATTGACATTGAGAGCACCGCATCTGTTGTAGTA 3784
               || |||||||| ||  || | || |  ||||| ||||| |  || |||||| | || |||
Db        3738 TTTAACGCACCCGAGTTGTCTGGCATCATTGATATTGAAAATACTGCATCTTTAGTTGTA 3797

Qy        3785 GATAAGTTTTTTGATAGCTATTTTATTAAAAAAGAAAAATACACAAAAAATATTGCTGGA 3844
               ||||||||||||||||| |||||  ||||| || ||| | |  |||| || | || |
Db        3798 GATAAGTTTTTTGATAGTTATTTGCTTAAAGAAAAAAGAAAACCAAATAAAAATGTTTCT 3857

Qy        3845 GTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAACAGGAAAGAAGTACTATTGGAC 3904
                || | |  |  || ||  | |  |||||||| |||||   | || | |||  | | | |
Db        3858 TTGTTCAGTAGAGAGTCTCTCAATAGATGGTTAGAAAAGCAGGAACAGGTAACAATAGGC 3917

Qy        3905 GACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATCGATCAGTACAAGCACATGATC 3964
                |  | ||  | |   |||||  |||| |||| ||  | ||||||||||  ||||||||
Db        3918 CAGCTCGCAGATTTTGATTTTGTAGATTTGCCAGCAGTTGATCAGTACAGACACATGATT 3977

Qy        3965 AAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAGAATGAATACCCTGCTCTGCAA 4024
               || || ||||| || || |||||||||  |||||| || |  || ||||| ||| ||||
Db        3978 AAAGCACAACCCAAGCAAAAATTGGACACTTCAATCCAAACGGAGTACCCGGCTTTGCAG 4037

Qy        4025 ACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTGGCCGGTTTCTCA---GAGCTT 4081
               || ||||| |||||||| ||  ||||||| |  || || | |   || |     ||||||
Db        4038 ACGATTGTGTACCATTCAAAAAAGATCAATGCAATATTTGGCCCGTTGTTTAGTGAGCTT 4097

Qy        4082 ACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTTCTTTTCTTTACTAGGAAAACT 4141
               || |||    | || ||     ||||||| |  |  ||| | || || || || || ||
Db        4098 ACTAGGCAATTACTGGACAGTGTTGATTCGAGCAGATTTTTGTTTTTCACAAGAAAGACA 4157

Qy        4142 CCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCGCACGTTCCTATGGATGTGTTA 4201
               ||||  |||||| | || || |||   |||||||||   || || || |||||||| ||
Db        4158 CCAGCGCAGATTGAGGATTTCTTCGGAGATCTCGACAGTCATGTGCCGATGGATGTCTTG 4217

Qy        4202 GAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAGTTTCATTGTGCTGTAGAGTAT 4261
               || |||||||| || || || || || || ||||| || || || ||||| ||||| ||
Db        4218 GAGCTGGATATATCAAAATACGACAAATCTCAGAATGAATTCCACTGTGCAGTAGAATAC 4277

Qy        4262 GAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCCGAAGTGTGGAAACAAGGGCAC 4321
               || || |||  |||||||||| |  | || || ||||  ||||| ||||||||||||||
Db        4278 GAGATCTGGCGAAGATTGGGTTTTGAAGACTTCTTGGGAGAAGTTTGGAAACAAGGGCAT 4337

Qy        4322 AGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAGACATGTCTGTGGTATCAAAGG 4381
               || || || ||  | |||||||| |  || || || || || ||  | |||||||||||
Db        4338 AGAAAGACCACCCTCAAGGATTATACCGCAGGTATAAAAACTTGCATCTGGTATCAAAGA 4397

Qy        4382 AAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTTATAATAGCAGCTTGCTTGGGT 4441
               || ||||| || || || || ||||| || || ||||| || || || || || ||||
Db        4398 AAGAGCGGGGACGTCACGACGTTCATTGGAAACACTGTGATCATTGCTGCATGTTTGGCC 4457

Qy        4442 TCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTTTGTGGAGACGATTCCGTTTTG 4501
               || ||| | |||||||| ||  | || ||||| || ||||| || ||||||    |  ||
Db        4458 TCGATGCTTCCGATGGAGAAAATAATCAAAGGAGCCTTTTGCGGTGACGATAGTCTGCTG 4517

Qy        4502 TATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCATGTGCTAATCTCATGTGGAAT 4561
               || |||||||||||||  || || || ||  | ||    |  || ||||| |||||||||
Db        4518 TACTTTCCAAAGGGTTGTGAGTTTCCGGATGTGCAACACTCCGCGAATCTTATGTGGAAT 4577

Qy        4562 TTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTTTGTGGTAGATACATCATACAC 4621
               ||||| || ||||||| || |||   ||| || |||||||| || |||||  | |||||
Db        4578 TTTGAAGCAAAACTGTTTAAAAAACAGTATGGATACTTTTGCGGAAGATATGTAATACAT 4637

Qy        4622 CATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAGTTGATCTCCAAACTTGGGGCA 4681
               || || |  |||   || |||||||| |||||  | ||||||||||| |||||||| ||
Db        4638 CACGACAGAGGATGCATTGTGTATTACGATCCCCTAAAGTTGATCTCGAAACTTGGTGCT 4697

Qy        4682 AAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGGGTGTCTTTGTGCGATGTTGCT 4741
               ||||| ||||||||||  || ||||| || ||||| ||   |||| | || |||||||||
Db        4698 AAACACATCAAGGATTGGGAACACTTGGAGGAGTTCAGAAGGTCTCTTTGTGATGTTGCT 4757

Qy        4742 TGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTGAACGCAGCTATCAAGGAGGTT 4801
                 |||| |    |||   ||       |   | ||| || |||  ||| |   |||||||
Db        4758 GTTTCGTT---GAACAATTGTGCGTATTACACACAGTTGGACGACGCTGTATGGGAGGTT 4814

Qy        4802 CATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGTGTTAACAAATTTTTGTGTGAT 4861
               ||||| |||||   |   |||||||||| || |||  || |    || | ||||| ||||
Db        4815 CATAAGACCGCCCCTCCAGGTTCGTTTGTTTATAAAAGTCTGGTGAAGTATTTGTCTGAT 4874

Qy        4862 AAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAGTCTCAGAGATACTGTCAAAAT 4921
               ||| || | ||||||| ||||||| || |||||| |   | | | ||  |  || || ||
Db        4875 AAAGTTCTTTTTAGAAGTTTGTTTATAGATGGCTCTAGTTGTTAAAGGAAAAGTGAATAT 4934

Qy        4922 TAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACTTCCGGCATTCATGACTAAGGT 4981
                |  ||||| || || ||  | |||  |||  ||||  | ||| |  |  | ||    ||
Db        4935 CAATGAGTTTATCGACCTGACAAAAATGGAGAAGATCTTACCGTCGATGTTTACCCCTGT 4994

Qy        4982 CAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGCTGTTAAGAATGATAGTCTTTC 5041
                ||||||||||     || |  || || || || |||| |  | |||||||     | ||
Db        4995 AAAGAGTGTTATGTGTTCCAAAGTTGATAAAATAATGGTTCATGAGAATGAGTCATTGTC 5054

Qy        5042 TGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAAAGGGTATGTGTGCTTAGCTGA 5101
                || ||  |  | |||||||| |||||| |  || | |  || || || || ||||| |
Db        5055 AGAGGTGAACCTTCTTAAAGGAGTTAAGCTTATTGATAGTGGATACGTCTGTTTAGCCGG 5114

Qy        5102 TTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTGCCGTGGTGGTGTCAGTGTTTG 5161
               |||||| ||  | || ||||||||  | || || || ||| | || ||||| || || ||
Db        5115 TTTGGTCGTCACGGGCGAGTGGAACTTGCCTGACAATTGCAGAGGAGGTGTGAGCGTGTG 5174

Qy        5162 TATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAACGCTGGGTGCGTATCACGCCCC 5221
               | | || || || || ||| ||||     | || || || || ||  | ||  || |  |
Db        5175 TCTGGTGGACAAAAGGATGGAAAGAGCCGACGAGGCCACTCTCGGATCTTACTACACAGC 5234

Qy        5222 TGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAATTATTCAATAACATCCGAGGA 5281
                |||   || || |  |||   || ||| |  | || |||||| | |||||  || ||||
Db        5235 AGCTGCAAAGAAAAGATTTCAGTTCAAGGTCGTTCCCAATTATGCTATAACCACCCAGGA 5294

Qy        5282 TGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAAAGGAGTGGCTATGGAAGAAGG 5341
                ||   |||   ||   |||||||| ||||| ||||| | |   |||   |||  ||  ||
Db        5295 CGCGATGAAAAACGTCTGGCAAGTTTTAGTTAATATTAGAAATGTGAAGATGTCAGCGGG 5354

Qy        5342 ATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGTAGTACATAAAAATAATGTAAG 5401
                | ||||||  | ||| ||||||| || ||  | ||| | ||  ||| ||||||| |||
Db        5355 TTTCTGTCCGCTTTCTCTGGAGTTTGTGTCGGTGTGTATTGTTTATAGAAATAATATAAA 5414
```

```
Qy      5402 AAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGGCTCGCCAATTGAACTCACTGA 5461
             |  |||||||||| ||    |||   |  |||| ||||||   ||| || ||||| || ||
Db      5415 ATTAGGTTTGAGAGAGAAGATTACAAACGTGAGAGACGGAGGGCCCATGGAACTTACAGA 5474

Qy      5462 AAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGCTGTGAAACTCGAAAAGGTTC- 5520
             | | || ||||| |||||| |||| || || || ||| |  | |  || | |||| |||
Db      5475 AGAAGTCGTTGATGAGTTCATGGAAGATGTCCCTATGTCGATCAGGCTTGCAAAGTTTCG 5534

Qy      5521 -----------CGGAAAACAAAAAAGAAATGGTAGGTAATAATGTTAATAAT-------- 5561
                           |||| |   | |       ||| || |||  || ||||
Db      5535 ATCTCGAACCGGAAAAAAGAGTGATGTCCGCAAAGGAAAAAATAGTAGTAATGATCGGTC 5594

Qy      5562 -------AAGAAAATAAATAACAGTGGTAAGAAGGGTTTTAAAATTGAGGAAATTGAGGA 5614
                    || || |   |||  | || |||| |   |     |||       |   || |
Db      5595 AGTGCCGAACAAGAACTATAGAAATGTTAAGGATTTTGGAGGAATGAGTTTTAAAAAGAA 5654

Qy      5615 TAATGTAAGTGATGACGAGT---------CTATCGCGTCATCGAGTACGTTTTAATCAAT 5665
             |||| |||  ||||| || |         || ||||   ||||  | |||||||   |||
Db      5655 TAATTTAATCGATGATGATTCGGAGGCTACTGTCGCCGAATCGGATTCGTTTTA---AAT 5711

Qy      5666 ATGCCTTATACAATCAACTCTCCGAGCCAATTTGTTTACTTATCTTCCGCTTACGCAGAT 5725
             ||| |||| |  ||||   ||||    || || || | || | || || ||  |  || ||
Db      5712 ATGTCTTACAGTATCACTACTCCATCTCAGTTCGTGTTCTTGTCATCAGCGTGGGCCGAC 5771

Qy      5726 CCTGTGCAGCTGATCAATCTGTGTACAAATGCATTGGGTAACCAGTTTCAAACGCAACAA 5785
             ||  |  || | || ||| | ||||| ||||| || || || ||||||||||||| ||||||
Db      5772 CCAATAGAGTTAATTAATTTATGTACTAATGCCTTAGGAAATCAGTTTCAAACACAACAA 5831

Qy      5786 GCTAGGACAACAGTCCAACAGCAATTTGCGGATGCCTGGAAACCTGTGCCTAGTATGACA 5845
             ||| | ||    || |||   |||||    || |  |||||||||   ||     | ||
Db      5832 GCTCGAACTGTCGTTCAAAGACAATTCAGTGAGGTGTGGAAACCTTCACCACAAGTAACT 5891

Qy      5846 GTGAGATTTCCTGCATCGGATTTCTATGTGTATAGATATAATTCGACGCTTGATCCGTTG 5905
             || || || ||||     || ||  | ||||| || || || ||    | || ||| |
Db      5892 GTTAGGTTCCCTGACAGTGACTTTAAGGTGTACAGGTACAATGCGGTATTAGACCCGCTA 5951

Qy      5906 ATCACGGCGTTATTAAATAGCTTTGATACTAGAAATAGAATAATAGAGGTTGATAATCAA 5965
              |||| ||  | |||  |   || || |||||||||||||||||||| ||||| |||||
Db      5952 GTCACAGCACTGTTAGGTGCATTCGACACTAGAAATAGAATAATAGAAGTTGAAAATCAG 6011

Qy      5966 CCCGCACCGAATACTACTGAAATCGTTAACGCGACTCAGAGGGTAGACGATGCTACTGTA 6025
              |    || |  ||| | ||||   |  | || ||||  || |||||||| || || ||
Db      6012 GCGAACCCCACGACTGCCGAAACGTTAGATGCTACTCGTAGAGTAGACGACGCAACGGTG 6071

Qy      6026 GCTATAAGGGCTTCAATCAATAATTTGGCTAATGAACTGGTTCGTGGAACTGGCATGTTC 6085
             || ||||||    | || ||||||||       ||| || |  | ||||| ||    |
Db      6072 GCCATAAGGAGCGCGATAAATAATTTAATAGTAGAATTGATCAGAGGAACCGGATCTTAT 6131

Qy      6086 AATCAAGCAGGCTTTGAGACTGCTAGTGGACTTGTCTGGACCACAACTCCGGCTACTTAG 6145
             ||||        || ||||   ||  |||  | || ||||||| |   ||| || |||
Db      6132 AATCGGAGCTCTTTCGAGAGCTCTTCTGGTTTGGTTTGGACCTCTGGTCCTGCAACT--- 6188

Qy      6146 CTATTGTTGTGAGATTTCCTAAAATAAAGTCGCTGAAGACTTAAAATTCAGGGTGGCTGA 6205
              |   || || |   | | ||| | | |   | |   | |   ||   ||  ||||
Db      6189 -TGAGGTAGTCAAGATGCATAATAAATAACGGATTGTGTCCGTAATCACA-CGTGGTGCG 6246

Qy      6206 TACCAAAATCAGCAGTGGTTGTTCGTCCACTTAAATATAACGATTGTCATATCTGGATCC 6265
             ||| | ||     |||| || | | |||||||||||  ||  | ||||  |  |  |    |
Db      6247 TACGATAACGCATAGTGTTTTTCCCTCCACTTAAATCGAAGGGTTGT-GTCTTGGATCGC 6305

Qy      6266 AACAGTTAAACCATGTGATGGTGTATACTGTGGTATGGCGTAAAACATCGGAGAGGTTCG 6325
                 || |||                |||||    | | |     ||  |   ||| ||||||
Db      6306 GCGGGTCAAATGTATATGGTTCATATACATCCGCAGGCACGTAATAAAGCGAGGGGTTCG 6365

Qy      6326 AATCCTCCCCTAACCGCCGGTAGCGGCCCA 6355
             ||||| ||| | ||| ||||||| ||||||
Db      6366 AATCCCCCCGTTACCCCCGGTAGGGGCCCA 6395
```

RESULT 7
US-09-259-741-2
; Sequence 2, Application US/09259741
; Patent No. 6033895

```
;  GENERAL INFORMATION:
;    APPLICANT:  GARGER, STEPHEN
;    APPLICANT:  HOLTZ, R. BARRY
;    APPLICANT:  McCULLOCH, MICHAEL
;    APPLICANT:  TURPEN, THOMAS
;    TITLE OF INVENTION:  A PROCESS FOR ISOLATING AND
;    TITLE OF INVENTION:  PURIFYING VIRUSES SOLUBLE PROTEINS AND PEPTIDES FROM PLANT
;    TITLE OF INVENTION:  SOURCES
;    NUMBER OF SEQUENCES:  5
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  Howrey & Simon
;      STREET:  1299 Pennsylvania Avenue N.W.
;      CITY:  Washington
;      STATE:  DC
;      COUNTRY:  USA
;      ZIP:  20004
;    COMPUTER READABLE FORM:
;      MEDIUM TYPE:  Diskette
;      COMPUTER:  IBM Compatible
;      OPERATING SYSTEM:  DOS
;      SOFTWARE:  FastSEQ for Windows Version 2.0
;    CURRENT APPLICATION DATA:
;      APPLICATION NUMBER:  US/09/259,741
;      FILING DATE:  February 25, 1999
;      CLASSIFICATION:
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:  09/037,751
;      FILING DATE:  March 10, 1998
;    ATTORNEY/AGENT INFORMATION:
;      NAME:  Halluin, Albert P
;      REGISTRATION NUMBER:  25,277
;      REFERENCE/DOCKET NUMBER:  00801.0140.US01
;    TELECOMMUNICATION INFORMATION:
;      TELEPHONE:  650-463-8100
;      TELEFAX:  650-463-8400
;      TELEX:
;   INFORMATION FOR SEQ ID NO:  2:
;    SEQUENCE CHARACTERISTICS:
;      LENGTH:  6439 base pairs
;      TYPE:  nucleic acid
;      STRANDEDNESS:  single
;      TOPOLOGY:  unknown
;    MOLECULE TYPE:  Genomic RNA
US-09-259-741-2

  Query Match             38.6%;  Score 2455.4;  DB 3;  Length 6439;
  Best Local Similarity   44.8%;  Pred. No. 0;
  Matches 2772;  Conservative 1147;  Mismatches 2206;  Indels   60;  Gaps    8;

Qy        20 ACAACAACAATTAAAACAAAAACAACATATTACAAACAACAAACAACAACAATGGCACAC 79
             || |  |  |  |||  | ||||||||:   |   || |   ||||  ||||:|||| ||
Db        18 ACCAACAACAACAAACAACAAACAACAUUACAAUUACUAUUUACAAUUACAAUGGCAUAC 77

Qy        80 ATACAATCTATAATTAGCAACGCCCTTCTTGAAAGCGTGAGTGGTAAAAACACTCTCGTT 139
             | |||  |    |  |     ||  : |: || |  |:  | || || ||| |  : |:
Db        78 ACACAGACAGCUACCACAUCAGCUUUGCUGGACACUGUCCGAGGAAACAACUCCUUGGUC 137

Qy       140 AATGACCTTGCAAGAAGGCGCATGTACGATACGGCCGTGGAAGAATTTAACGCCCGCGAC 199
             ||:|| |: ||||   | ||  : :|||| || || |: ||||| :::||||| || |||
Db       138 AAUGAUCUAGCAAAGCGUCGUCUUUACGACACAGCGGUUGAAGAGUUUAACGCUCGUGAC 197

Qy       200 CGTAGACCAAAGGTCAACTTTTCCAAAACTATTAGCGAAGAGCAAACGCTTCTAGTCTCC 259
             || || || ||||: |||::::| |||   |: ||||| ||||| ||||:: : |   ||
Db       198 CGCAGGCCCAAGGUGAACUUUUCAAAAGUAAUAAGCGAGGAGCAGACGCUUAUUGCUACC 257

Qy       260 AACGCGTACCCGGAGTTCCAGATTACCTTTTATAATACTCAAAATGCCGTACACAGTTTG 319
                |||:| || || ::||| |::|| ::::|:|| || |||||:||||: ||     :
Db       258 CGGGCGUAUCCAGAAUUCCAAAUUACAUUUUAUAACACGCAAAAUGCCGUGCAUUCGCUU 317

Qy       320 GCTGGAGGTTTGAGAGCATTAGAATTGGAATATCTGATGCTACAAGTTCCCTATGGATCG 379
             || || || ::| || | ::|||| :||||:|:|:||:| : ||| ::|||:| |||:|
Db       318 GCAGGUGGAUUGCGAUCUUUAGAACUGGAAUAUCUGAUGAUGCAAAUUCCCUACGGAUCA 377
```

```
Qy       380 CCGACATATGATATAGGTGGGAACTTTGCAGCACATTTGTTCAAAGGCAGGGATTACGTG 439
               ||| :|:|| |:||| ||||| :::||| | ||: :|::||| ||  |  :| |:
Db       378 UUGACUUAUGACAUAGGCGGGAAUUUUGCAUCGCAUCUGUUCAAGGGACGAGCAUAUGUA 437

Qy       440 CATTGCTGTATGCCCAATCTGGACATACGAGATATAATGAGGCACGAAGGACAAAAGGAC 499
             || :||:| |:|||||| |:|||| : ||||| |: |:| |||||||||| || || |||
Db       438 CACUGCUGCAUGCCCAACCUGGACGUUCGAGACAUCAUGCGGCACGAAGGCCAGAAAGAC 497

Qy       500 TCAATTGAGATGTATTTGTCCAGATTGTCTCGTTCTAACAAGGTAATTCCTGAGTTTCAA 559
                |::||  : :|  : :| ||  :     |       ||   | : ||  | :: |||
Db       498 AGUAUUGAACUAUACCUUUCUAGGCUAGAGAGAGGGGGGAAAACAGUCCCCAACUUCCAA 557

Qy       560 AGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAAGTCTGCTGCTCTAAAACTTTT 619
             | ||| || ::: |||| :| ||||||  :||  | || |    |:|    || ||:::
Db       558 AAGGAAGCAUUUGACAGAUACGCAGAAAUUCCUGAAGACGCUGUCUGUCACAAUACUUUC 617

Qy       620 CAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGAAGATACGCTGTTGCTCTGCAC 679
             |||      |||   || |||    || |    || |||   :| ||  ::|| |: |||
Db       618 CAGACAAUGCGACAUCAGCCGAUGCAGCAAUCAGGCAGAGUGUAUGCCAUUGCGCUACAC 677

Qy       680 AGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCGTTAATATCTAAGAATATACAT 739
             ||  : :|:|| |: || |   |:|||:: || || ||  :  :    || ||: : ||:
Db       678 AGCAUAUAUGACAUACCAGCCGAUGAGUUCGGGGCGGCACUCUUGAGGAAAAAUGUCCAU 737

Qy       740 GTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTACTAGACCAGACGGAGGTTACG 799
                :| :|:|| ||:: |   ::  | ||     :  : |: ||  |  |  | |: |
Db       738 ACGUGCUAUGCCGCUUUCCACUUCUCCGAGAACCUGCUUCUUGAAGAUUCAUACGUCAAU 797

Qy       800 CTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGATGATGTTTCTTTTTTCTTTGCT 859
              :  | ||||:   |||   :::     | || || ||  |  :  | ::::  :::||
Db       798 UUGGACGAAAUCAACGCGUGUUUUUCGCGCGAUGGAGACAAGUUGACCUUUUCUUUUGCA 857

Qy       860 GATGAAAGTACTTTAAATTATAGTCATAAATACAAAAATATCTTGCATTATGTAGTTAAA 919
                || ||:||: : ||::|: |:||:|  :|    ||:|:  :  | :|:|:    |||
Db       858 UCAGAGAGUACUCUUAAUUAUUGUCAUAGUUAUUCUAAUAUUCUUAAGUAUGUGUGCAAA 917

Qy       920 TCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAGGAATTTTTAGTCACTAGGGTT 979
              |::||:: || || :|:| :|||   |:::|| : ||||| :::::||:||| || |::
Db       918 ACUUACUUCCCGGCCUCUAAUAGAGAGGUUUACAUGAAGGAGUUUUUAGUCACCAGAGUU 977

Qy       980 AATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTATATTCTGTACAAGAGTGTTAGA 1039
             ||:|| :||::::|:|| ::: | | | :|||:|| : : :: :|:||||  |:|:
Db       978 AAUACCUGGUUUUGUAAGUUUUCUAGAAUAGAUACUUUUCUUUUGUACAAAGGUGUGGCC 1037

Qy      1040 CAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATGGAAGACGCCTTTGCTTACAAG 1099
             ||   | |    ||:||:|| |||:: :|:   || |:||||||||| :    ::||||
Db      1038 CAUAAAAGUGUAGAUAGUGAGCAGUUUUAUACUGCAAUGGAAGACGCAUGGCAUUACAAA 1097

Qy      1100 AAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTTAGAGACACGGCTTCGGTTAAC 1159
             || ||  : || |:|: |||||  || |||    :| ::   ||  |  | :| |: ||
Db      1098 AAGACUCUUGCAAUGUGCAACAGCGAGAGAAUCCUCCUUGAGGAUUCAUCAUCAGUCAAU 1157

Qy      1160 TTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCGCTGTTTGAGGGTTCTATTACC 1219
             :  :||:: || || |:|| ||| |:||: |: |:|||  : :: ||   ::|: :
Db      1158 UACUGGUUUCCCAAAAUGAGGGAUAUGGUCAUCGUACCAUUAUUCGACAUUUCUUUGGAG 1217

Qy      1220 AGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGTGACTTCGTTTACACAGTGCTT 1279
             |  |  |||| |||  | |  || |:| : |:       || ::||: :  ||||:||::
Db      1218 ACUAGUAAGAGGACGCGCAAGGAAGUCUUAGUGUCCAAGGAUUUCGUGUUUACAGUGCUU 1277

Qy      1280 AATCATATCAGAACATATCAAGCCAAAGCGTTAACTTACCAGAACGTATTATCTTTCGTG 1339
             || || |:  |||||:| || || |||||  : || :||   || |: :: :|  : |:
Db      1278 AACCACAUUCGAACAUACCAGGCGAAAGCUCUUACAUACGCAAAUGUUUUGUCCCUUGUC 1337

Qy      1340 GAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACTGCTAGGTCTGAATGGGATGTA 1399
             || :| |:  ||:|  | |: |: |: || ||:|: || || |||:| |||:||||:|:
Db      1338 GAAUCGAUUCGAUCGAGGGUAAUCAUUAACGGUGUGACAGCGAGGUCCGAAUGGGAUGUG 1397

Qy      1400 GATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTCTTGCAGACTAAGCTGGCTGCG 1459
             || ||| |  :  : ||| ||::|:| |:||| :: : | :||| ||:||||: || |
Db      1398 GACAAAUCUUUGUUACAAUCCUUGUCCAUGACGUUUUACCUGCAUACUAAGCUUGCCGUU 1457

Qy      1460 CTTCAAGACGATATAGTAATGGGAAAGTTTCGGTGCTTGGATAAGACCACTTCTGAACTT 1519
             |:  | || ||  :| : |:  | |||::: |   |      || ||    :   | | :
Db      1458 CUAAAGGAUGACUUACUGAUUAGCAAGUUUAGUCUCGGUUCGAAAACGGUGUGCCAGCAU 1517

Qy      1520 ATTTGGGATGAGGTGGGCAAATTTTTTGGAAACGTTTTCCCCACTATCAAAGAGAGATTG 1579
              : :||||:||| :          :::|| ||||  :: ||| |  : ||||||| :
Db      1518 GUGUGGGAUGAGAUUUCGCUGGCGUUUGGGAACGCAUUUCCCUCCGUGAAAGAGAGACUC 1577

Qy      1580 GTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTGAAGATCAAGATCCCAGATCTG 1639
              :|| ||||||| :: :    |:    |  | ||  :  |||:|| | : || ||:|:
Db      1578 UUGAACAGGAAACUUAUCAGAGUGGCAGGCGACGCAUUAGAGAUCAGGGUGCCUGAUCUA 1637

Qy      1640 TATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACCAAGTCTGAGGAGTTACCGCAT 1699
             :|:|: || :   | ||||| :: |:  |:|| :|||     :|:| |||  : ||
Db      1638 UAUGUGACCUUCCACGACAGAUUAGUGACUGAGUACAAGGCCUCUGUGGACAUGCCUGCG 1697

Qy      1700 CTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATGTACGACGCGTTATCAGAATTA 1759
             |: || |: | |||| |  : |||||| | ||    |:|:|| | ||  : :|||| ::|
Db      1698 CUUGACAUUAGGAAGAAGAUGGAAGAAACGGAAGUGAUGUACAAUGCACUUUCAGAGUUA 1757

Qy      1760 TCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAGTTCAAAGACATGTGCAAGGCT 1819
             :|  :  : | ||   |:|| || ::|||: : |     ::     | |:|:|| |  |:
Db      1758 UCGGUGUUAAGGGAGUCUGACAAAUUCGAUGUUGAUGUUUUUUCCCAGAUGUGCCAAUCU 1817

Qy      1820 TTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTTGCAGTGGCCGAGAATAGAAGC 1879
             :: || |::   ||      ||||||    |: |: |: || |:        ||:   |||
Db      1818 UUGGAAGUUGACCCAAUGACGGCAGCGAAGGUUAUAGUCGCGGUCAUGAGCAAUGAGAGC 1877

Qy      1880 GGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAATGTGGCTAAGGCTCT------T 1933
             ||: : ||:|: || :::||    || || |||| |||:|: ||    ||: :      :
Db      1878 GGUCUGACUCUCACAUUUGAACGACCUACUGAGGCGAAUGUUGCGCUAGCUUUACAGGAU 1937

Qy      1934 AAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCGACATCCGAAGAGGTGAACGTA 1993
              ||   | ||| :| || |  |   :     ::    | | |   |  || |
Db      1938 CAAGAGAAGGCUUCAGAAGGUGCAUUGGUAGUUACCUCAAGAGAAGUUGAAGAACCGUCC 1997

Qy      1994 AATAAATTTTCTATTGCTGAGAAAGGGAGATTGCCTGTGTGTGCAGAAAGTCATGGTTTG 2053
             |  ||   ::| |: ||      || |  |      |   |:   |   |  |:  :  |
Db      1998 AUGAAGGGUUCGAUGGCCAGAGGAGAGUUACAAUUAGCUGGUCUUGCUGGAGAUCAUCCG 2057

Qy      2054 ACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTCAACGATTTCCATAAGGCTTGC 2113
               |    |  | :   || || ||||| : |||:|  :  |  | :: ||:| |||
Db      2058 GAGUCGUCCUAUUCUAAGAACGAGGAGAUAGAGUCUUUAGAGCAGUUUCAUAUGGCGACG 2117

Qy      2114 GTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTCTACACTGGCTCACTCAAAGTT 2173
             |  ||:    : |::   ||||| |:|   :|| ::|: :|||| ||  |  : ||||::
Db      2118 GCAGAUUCGUUAAUUCGUAAGCAGAUGAGCUCGAUUGUGUACACGGGUCCGAUUAAAGUU 2177

Qy      2174 CAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCGTTGTCCGCCACTGTATCAAAT 2233
             || ||||:||| |||: : : || ||  :|| ||| :|  : :| ||  | |: :| ||:
Db      2178 CAGCAAAUGAAAAACUUUAUCGAUAGCCUGGUAGCAUCACUAUCUGCUGCGGUGUCGAAU 2237

Qy      2234 CTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCTGATTCCAGGGAGAAAGTTGGT 2293
             |:   ||||   |: || ||:  ||  |    :||   :||  || |  | ||  ::||
Db      2238 CUCGUCAAGAUCCUCAAAGAUACAGCUGCUAUUGACCUUGAAACCCGUCAAAAGUUUGGA 2297

Qy      2294 GTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCTGCGGCCAAAGGTCATTCATGG 2353
             |: : |||:|:  | :  |  |||:|| :  :||||||  |||||||  |:||: ||:||
Db      2298 GUCUUGGAUGUUGCAUCUAGGAAGUGGUUAAUCAAACCAACGGCCAAGAGUCAUGCAUGG 2357

Qy      2354 GGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCACTTCTATCTTATGAAGGAGAT 2413
             || |::|:        ||  | ||||      :   || |:: :    :|:|| |   |
Db      2358 GGUGUUGUUGAAACCCACGCGAGGAAGUAUCAUGUGGCGCUUUUGGAAUAUGAUGAGCAG 2417

Qy      2414 AGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTATCATCTGATACAATGGTATAT 2473
              |  :||:|||       || :|||| || |: ||:|:    :|:||  |  : |: :|:
Db      2418 GGUGUGGUGACAUGCGAUGAUUGGAGAAGAGUAGCUGUUAGCUCUGAGUCUGUUGUUUAU 2477

Qy      2474 TCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATGAGAGACGGTGAACCCCACGAA 2533
             :| || |: || || |:|  || :|:| | | |    :  || |||| ||||| || |
Db      2478 UCCGACAUGGCGAAACUCAGAACUCUGCGCAGACUGCUUCGAAACGGAGAACCGCAUGUC 2537

Qy      2534 CCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGTTGTGGAAAGTACAAAGGAGAT 2593
               :|  |||||| : |: |::|:||| || |: || || :|:|||||   ||||| |  :
```

```
Db       2538 AGUAGCGCAAAGGUUGUUCUUGUGGACGGAGUUCCGGGCUGUGGAAAAACCAAAGAAAUU 2597

Qy       2594 TTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTTCCTGGAAAACAAGCTGCTGCT 2653
Db       2598 CUUUCCAGGGUUAAUUUUGAUGAAGAUCUAAUUUUAGUACCUGGGAAGCAAGCCGCGGAA 2657

Qy       2654 ATGATCAGAAGAAGGGCTAATTCATCTGGACTGATAAGAGCCACAATGGACAATGTGAGA 2713
Db       2658 AUGAUCAGAAGACGUGCGAAUUCCUCAGGGAUUAUUGUGGCCACGAAGGACAACGUUAAA 2717

Qy       2714 ACGGTAGATTCACTTCTAATGCATCCAAAACCGCGATCACA---------CAAGAGGCTT 2764
Db       2718 ACCGUUGAUUCUUUCAUGAUGAAUUUUGGGAAAAGCACACGCUGUCAGUUCAAGAGGUUA 2777

Qy       2765 TTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTTAACTTCCTGGTGCTTATCTCT 2824
Db       2778 UUCAUUGAUGAAGGGUUGAUGUUGCAUACUGGUUGUGUUAAUUUUCUUGUGGCGAUGUCA 2837

Qy       2825 GGTTGCGACATCGCATACATTTACGGAGATACACAGCAGATTCCTTTCATTAACAGAGTT 2884
Db       2838 UUGUGCGAAAUUGCAUAUGUUUACGGAGACACACAGCAGAUUCCAUACAUCAAUAGAGUU 2897

Qy       2885 CAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAAGTGGATGAAGTTGAGATGAGG 2944
Db       2898 UCAGGAUUCCCGUACCCCGCCCAUUUUGCCAAAUUGGAAGUUGACGAGGUGGAGACACGC 2957

Qy       2945 AGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTCCTACAATCGAAGTACGAAGGA 3004
Db       2958 AGAACUACUCUCCGUUGUCCAGCCGAUGUCACACAUUAUCUGAACAGGAGAUAUGAGGGC 3017

Qy       3005 GCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCATCTGAGATGATAGGCGGTAAG 3064
Db       3018 UUUGUCAUGAGCACUUCUUCGGUUAAAAAGUCUGUUUCGCAGGAGAUGGUCGGCGGAGCC 3077

Qy       3065 GGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGGAAAATTGTAACTTTCACTCAGGCT 3124
Db       3078 GCCGUGAUCAAUCCGAUCUCAAAACCCUUGCAUGGCAAGAUCCUGACUUUUACCCAAUCG 3137

Qy       3125 GATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTGAACACCGTTCATGAGATCCAA 3184
Db       3138 GAUAAAGAAGCUCUGCUUUCAAGAGGGUAUUCAGAUGUUCACACUGUGCAUGAAGUGCAA 3197

Qy       3185 GGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACGGCAACTCCACTGACTCTGATT 3244
Db       3198 GGCGAGACAUACUCUGAUGUUUCACUAGUUAGGUUAACCCCUACACCAGUCUCCAUCAUU 3257

Qy       3245 TCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGACACACAAAGAGCTTCAAATAT 3304
Db       3258 GCAGGAGACAGCCCACAUGUUUUGGUCGCAUUGUCAAGGCACACCUGUUCGCUCAAGUAC 3317

Qy       3305 TACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGTGATTTGTCTTCTTTAAGCTCC 3364
Db       3318 UACACUGUUGUUAUGGAUCCUUUAGUUAGUAUCAUUAGAGAUCUAGAGAAACUUAGCUCG 3377

Qy       3365 TTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGATAGCAATTACAGATGGATGCA 3424
Db       3378 UACUUGUUAGAUAUGUAUAAGGUCGAUGCAGGAACACAAUAGCAAUUACAGAUUGACUCG 3437

Qy       3425 GTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAATCAGGAGACTTTCCAGATCTA 3484
Db       3438 GUGUUCAAAGGUUCCAAUCUUUUUGUUGCAGCGCCAAAGACUGGUGAUAUUUCUGAUAUG 3497

Qy       3485 CAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACTATACTTAACAAGTATGATGCT 3544
Db       3498 CAGUUUUACUAUGAUAAGUGUCUCCCAGGCAACAGCACCAUGAUGAAUAAUUUUGAUGCU 3557

Qy       3545 GTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAGGATTGTGTTCTTGATTTTTCC 3604
Db       3558 GUUACCAUGAGGUUGACUGACAUUUCAUUGAAUGUCAAAGAUUGCAUAUUGGAUAUGUCU 3617

Qy       3605 AAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTAGAGCCAGTTTTGCGTACCGCG 3664
Db       3618 AAGUCUGUUCGUGCGCCUAAGGAUCAAAUCAAACCACUAAUACCUAUGGUACGAACGGCG 3677
```

```
Qy       3665 GCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTGGTTGCAATGATTAAAAGAAAT 3724
Db       3678 GCAGAAAUGCCACGCCAGACUGGACUAUUGGAAAAUUUAGUGGCGAUGAUUAAAAGAAAC 3737

Qy       3725 TTCAACGCACCAGACCTGACGGGGACGATTGACATTGAGAGCACCGCATCTGTTGTAGTA 3784
Db       3738 UUUAACGCACCCGAGUUGUCUGGCAUCAUUGAUAUUGAAAAUACUGCAUCUUUGGUUGUA 3797

Qy       3785 GATAAGTTTTTGATAGCTATTTTATTAAAAAAGAAAAATACACAAAAAATATTGCTGGA 3844
Db       3798 GAUAAGUUUUUUGAUAGUUAUUUGCUUAAAGAAAAAAGAAAACCAAAUAAAAAUGUUUCU 3857

Qy       3845 GTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAACAGGAAAGAAGTACTATTGGAC 3904
Db       3858 UUGUUCAGUAGAGAGUCUCUCAAUAGAUGGUUAGAAAAGCAGGAACAGGUAACAAUAGGC 3917

Qy       3905 GACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATCGATCAGTACAAGCACATGATC 3964
Db       3918 CAGCUCGCAGAUUUUGAUUUUGUGGAUUUGCCAGCAGUUGAUCAGUACAGACACAUGAUU 3977

Qy       3965 AAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAGAATGAATACCCTGCTCTGCAA 4024
Db       3978 AAAGCACAACCCAAACAAAAGUUGGACACUUCAAUCCAAACGGAGUACCCGGCUUUGCAG 4037

Qy       4025 ACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTGGCCGGTTTCT---CAGAGCTT 4081
Db       4038 ACGAUUGUGUACCAUUCAAAAAAGAUCAAUGCAAUAUUCGGCCCGUUGUUUAGUGAGCUU 4097

Qy       4082 ACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTTCTTTTCTTTACTAGGAAAACT 4141
Db       4098 ACUAGGCAAUUACUGGACAGUGUUGAUUCGAGCAGAUUUUUGUUUUUCACAAGAAAGACA 4157

Qy       4142 CCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCGCACGTTCCTATGGATGTGTTA 4201
Db       4158 CCAGCGCAGAUUGAGGAUUUCUUCGGAGAUCUCGACAGUCAUGUGCCGAUGGAUGUCUUG 4217

Qy       4202 GAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAGTTTCATTGTGCTGTAGAGTAT 4261
Db       4218 GAGCUGGAUAUAUCAAAAUACGACAAAUCUCAGAAUGAAUUCCACUGUGCAGUAGAAUAC 4277

Qy       4262 GAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCCGAAGTGTGGAAACAAGGGCAC 4321
Db       4278 GAGAUCUGGCGAAGAUUGGGUUUUGAAGACUUCUUGGGAGAAGUUUGGAAACAAGGGCAU 4337

Qy       4322 AGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAGACATGTCTGTGGTATCAAAGG 4381
Db       4338 AGAAAGACCACCCUCAAGGAUUAUACCGCAGGUAUAAAAACUUGCAUCUGGUAUCAAAGA 4397

Qy       4382 AAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTTATAATAGCAGCTTGCTTGGGT 4441
Db       4398 AAGAGCGGGGACGUCACGACGUUCAUUGGAAACACUGUGAUCAUUGCUGCAUGUUUGGCC 4457

Qy       4442 TCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTTTGTGGAGACGATTCCGTTTTG 4501
Db       4458 UCGAUGCUUCCGAUGGAGAAAAUAAUCAAAGGAGCCUUUUGCGGUGACGAUAGUCUGCUG 4517

Qy       4502 TATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCATGTGCTAATCTCATGTGGAAT 4561
Db       4518 UACUUUCCAAAGGGUUGUGAGUUUCCGGAUGUGCAACACUCCGCGAAUCUUAUGUGGAAU 4577

Qy       4562 TTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTTTGTGGTAGATACATCATACAC 4621
Db       4578 UUUGAAGCAAAACUGUUUAAAAAACAGUAUGGAUACUUUUGCGGAAGAUAUGUAAUACAU 4637

Qy       4622 CATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAGTTGATCTCCAAACTTGGGGCA 4681
Db       4638 CACGACAGAGGAUGCAUUGUGUAUUACGAUCCCCUAAAGUUGAUCUCGAAACUUGGUGCU 4697

Qy       4682 AAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGGGTGTCTTTGTGCGATGTTGCT 4741
Db       4698 AAACACAUCAAGGAUUGGGAACACUUGGAGGAGUUCAGAAGGUCUCUUUGUGAUGUUGCU 4757
```

```
Qy       4742 TGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTGAACGCAGCTATCAAGGAGGTT 4801
                ::|| :    || :|    :     :   | ||| :| |||  ||: :   |||||::
Db       4758 GUUUCGUUGAACAAUUGUGCGUA---UUACACACAGUUGGACGACGCUGUAUGGGAGGUU 4814

Qy       4802 CATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGTGTTAACAAATTTTTGTGTGAT 4861
              ||:|| |||||   :   ||::||:::| :: :||  |: :    || : :::|: :||:
Db       4815 CAUAAGACCGCCCCUCCAGGUUCGUUUGUUUAUAAAAGUCUGGUGAAGUAUUUGUCUGAU 4874

Qy       4862 AAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAGTCTCAGAGATACTGTCAAAAT 4921
              ||| :: : :::|||| ::::::: :| |:|||: :   : : | ||  |  |: || |:
Db       4875 AAAGUUCUUUUUAGAAGUUUGUUUAUAGAUGGCUCUAGUUGUUAAAGGAAAAGUGAAUAU 4934

Qy       4922 TAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACTTCCGGCATTCATGACTAAGGT 4981
               |  |||:: |: || |: :| |||  |||  |||:  : ||| |  :  : ||    |:
Db       4935 CAAUGAGUUUAUCGACCUGUCAAAAAUGGAGAAGAUCUUACCGUCGAUGUUUACCCCUGU 4994

Qy       4982 CAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGCTGTTAAGAATGATAGTCTTTC 5041
               |||||:|::|     :| |  |: || || |: |:|| :  : ||||:||     : :|
Db       4995 AAAGAGUGUUAUGUGUUCCAAAGUUGAUAAAAUAAUGGUUCAUGAGAAUGAGUCAUUGUC 5054

Qy       5042 TGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAAAGGGTATGTGTGCTTAGCTGA 5101
               || |:  |  : |::||||| |::||| :  :: | |  || :| |: :| ::||| |
Db       5055 AGAGGUGAACCUUCUUAAAGGAGUUAAGCUUAUUGAUAGUGGAUACGUCUGUUUAGCCGG 5114

Qy       5102 TTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTGCCGTGGTGGTGTCAGTGTTTG 5161
              :::||: |:  | || |||:||||  : || || || :|| | || ||:|: || |: :|
Db       5115 UUUGGUCGUCACGGGCGAGUGGAACUUGCCUGACAAUUGCAGAGGAGGUGUGAGCGUGUG 5174

Qy       5162 TATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAACGCTGGGTGCGTATCACGCCCC 5221
              : : |: || || || |:| ||||     | || || || |: ||  | :|  || |  |
Db       5175 UCUGGUGGACAAAAGGAUGGAAAGAGCCGACGAGGCCACUCUCGGAUCUUACUACACAGC 5234

Qy       5222 TGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAATTATTCAATAACATCCGAGGA 5281
               ||:   || || |  :::   :: ||| :  : || ||::|: | |:||  || ||||
Db       5235 AGCUGCAAAGAAAAGAUUUCAGUUCAAGGUCGUUCCCAAUUAUGCUAUAACCACCCAGGA 5294

Qy       5282 TGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAAAGGAGTGGCTATGGAAGAAGG 5341
               ||   |||  ||   :||||||: ::||: ||:|: | |   |:|   |:|  ||  ||
Db       5295 CGCGAUGAAAAACGUCUGGCAAGUUUUAGUUAAUAUUAGAAAUGUGAAGAUGUCAGCGGG 5354

Qy       5342 ATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGTAGTACATAAAAATAATGTAAG 5401
               : |:|:||  : :|: :||||:: |: :|  : :|: : |:  |:| ||||:||: :||
Db       5355 UUUCUGUCCGCUUUCUCUGGAGUUUGUGUCGGUGUGUAUUGUUUAUAGAAAUAAUAUAAA 5414

Qy       5402 AAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGGCTCGCCAATTGAACTCACTGA 5461
              |  |||:::||| ||    |::   |  |:|| ||||||   ||| |: ||||: || ||
Db       5415 AUUAGGUUUGAGAGAGAAGAUUACAAACGUGAGAGACGGAGGGCCCAUGGAACUUACAGA 5474

Qy       5462 AAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGCTGTGAAACTCGAAAAGGTTCC 5521
              | | |: |::|| |||::| :||| || |: || |:| | |  : |  |: |  |||| ::|
Db       5475 AGAAGUCGUUGAUGAGUUCAUGGAAGAUGUCCCUAUGUCGAUCAGGCUUGCAAAGUUUCG 5534

Qy       5522 GG------------AAAACAAAAAAGAAATGGTAGGTAATAATGTTAATAAT-------- 5561
                            |||| |   | |       ||| || ||:  :| :||:
Db       5535 AUCUCGAACCGGAAAAAAGAGUGAUGUCCGCAAAGGGAAAAAUAGUAGUAAUGAUCGGUC 5594

Qy       5562 -------AAGAAAATAAATAACAGTGGTAAGAAGGGTTTTAAAATTGAGGAAATTGAGGA 5614
                     || || |   |:|  | :| :||| |   :     ||:       |   || |
Db       5595 AGUGCCGAACAAGAACUAUAGAAAUGUUAAGGAUUUUGGAGGAAUGAGUUUUAAAAAGAA 5654

Qy       5615 TAATGTAAGTGATGACGAGT---------CTATCGCGTCATCGAGTACGTTTTAATCAAT 5665
              :||: :||  ||:|| || :         |: :|||   |:||  : ||:::::|   ||:
Db       5655 UAAUUUAAUCGAUGAUGAUUCGGAGGCUACUGUCGCCGAAUCGGAUUCGUUUUA---AAU 5711

Qy       5666 ATGCCTTATACAATCAACTCTCCGAGCCAATTTGTTTACTTATCTTCCGCTTACGCAGAT 5725
              |:| |::| |  |:||   |:||    || :: |: : |:: :| :| || :  || ||
Db       5712 AUGUCUUACAGUAUCACUACUCCAUCUCAGUUCGUGUUCUUGUCAUCAGCGUGGGCCGAC 5771

Qy       5726 CCTGTGCAGCTGATCAATCTGTGTACAAATGCATTGGGTAACCAGTTTCAAACGCAACAA 5785
              ||  :  || : |: ||: : :|:|| ||:|| :: || || |||:::||||| ||||||
Db       5772 CCAAUAGAGUUAAUUAAUUUAUGUACUAAUGCCUUAGGAAAUCAGUUUCAAACACAACAA 5831

Qy       5786 GCTAGGACAACAGTCCAACAGCAATTTGCGGATGCCTGGAAACCTGTGCCTAGTATGACA 5845
              ||: | ||    |: |||   |||::    || |  :|||||||:   ||     : ||
Db       5832 GCUCGAACUGUCGUUCAAAGACAAUUCAGUGAGGUGUGGAAACCUUCACCACAAGUAACU 5891

Qy       5846 GTGAGATTTCCTGCATCGGATTTCTATGTGTATAGATATAATTCGACGCTTGATCCGTTG 5905
              |: || :: ||:|     || ::  | |:|:| || :| ||: ||    : || ||| :
Db       5892 GUUAGGUUCCCUGACAGUGACUUUAAGGUGUACAGGUACAAUGCGGUAUUAGACCCGCUA 5951

Qy       5906 ATCACGGCGTTATTAAATAGCTTTGATACTAGAAATAGAATAATAGAGGTTGATAATCAA 5965
               :||| ||  : ::|  :   :: || ||:|||||:||||:||:||| |::|| ||:||
Db       5952 GUCACAGCACUGUUAGGUGCAUUCGACACUAGAAAUAGAAUAAUAGAAGUUGAAAAUCAG 6011

Qy       5966 CCCGCACCGAATACTACTGAAATCGTTAACGCGACTCAGAGGGTAGACGATGCTACTGTA 6025
               |    || |  ||: | ||||   :  | || ||:|  || |:|||||| || || |:
Db       6012 GCGAACCCCACGACUGCCGAAACGUUAGAUGCUACUCGUAGAGUAGACGACGCAACGGUG 6071

Qy       6026 GCTATAAGGGCTTCAATCAATAATTTGGCTAATGAACTGGTTCGTGGAACTGGCATGTTC 6085
              || |:||||    | |: ||:||:::       ||| :| :  | |||||  ||    :
Db       6072 GCCAUAAGGAGCGCGAUAAAUAAUUUAAUAGUAGAAUUGAUCAGAGGAACCGGAUCUUAU 6131

Qy       6086 AATCAAGCAGGCTTTGAGACTGCTAGTGGACTTGTCTGGACCACAACTCCGGCTACTTAG 6145
              ||:|        :: ||||   |:  :||  : |: :||||| || |   :|| || :||
Db       6132 AAUCGGAGCUCUUUCGAGAGCUCUUCUGGUUUGGUUUGGACCUCUGGUCCUGCAACCUAG 6191

Qy       6146 CTATT 6150
              | |::
Db       6192 CAAUU 6196

RESULT 8
US-09-037-751-2
; Sequence 2, Application US/09037751
; Patent No. 6037456
;  GENERAL INFORMATION:
;    APPLICANT:  GARGER, STEPHEN
;    APPLICANT:  HOLTZ, R. BARRY
;    APPLICANT:  McCULLOCH, MICHAEL
;    APPLICANT:  TURPEN, THOMAS
;    TITLE OF INVENTION:  A PROCESS FOR ISOLATING AND
;    TITLE OF INVENTION:  PURIFYING VIRUSES SOLUBLE PROTEINS AND PEPTIDES
;    TITLE OF INVENTION:  FROM PLANT SOURCES
;    NUMBER OF SEQUENCES:  5
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  Howrey & Simon
;      STREET:  1299 Pennsylvania Avenue N.W.
;      CITY:  Washington
;      STATE:  DC
;      COUNTRY:  USA
;      ZIP:  20004
;    COMPUTER READABLE FORM:
;      MEDIUM TYPE:  Diskette
;      COMPUTER:  IBM Compatible
;      OPERATING SYSTEM:  DOS
;      SOFTWARE:  FastSEQ for Windows Version 2.0
;    CURRENT APPLICATION DATA:
;      APPLICATION NUMBER:  US/09/037,751
;      FILING DATE:  10-MAR-1998
;      CLASSIFICATION:
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:
;      FILING DATE:
;    ATTORNEY/AGENT INFORMATION:
;      NAME:  Halluin, Albert P
;      REGISTRATION NUMBER:  25,277
;      REFERENCE/DOCKET NUMBER:  00801.0140.999
;    TELECOMMUNICATION INFORMATION:
;      TELEPHONE:  650-463-8109
;      TELEFAX:  650-463-8400
;      TELEX:
;  INFORMATION FOR SEQ ID NO:  2:
;    SEQUENCE CHARACTERISTICS:
;      LENGTH:  6439 base pairs
;      TYPE:  nucleic acid
;      STRANDEDNESS:  single
```

```
;     TOPOLOGY:  unknown
;   MOLECULE TYPE:  Genomic RNA
US-09-037-751-2

  Query Match             38.6%;  Score 2455.4;  DB 3;  Length 6439;
  Best Local Similarity   44.8%;  Pred. No. 0;
  Matches 2772;  Conservative 1147;  Mismatches 2206;  Indels   60;  Gaps    8;

Qy         20 ACAACAACAATTAAAACAAAAACAACATATTACAAACAACAAACAACAACAATGGCACAC 79
              || |  |  |  ||| | |||||||||:    |   || |   ||||  ||||:|||| ||
Db         18 ACCAACAACAACAAACAACAAACAACAUUACAAUUACUAUUUACAAUUACAAUGGCAUAC 77

Qy         80 ATACAATCTATAATTAGCAACGCCCTTCTTGAAAGCGTGAGTGGTAAAAACACTCTCGTT 139
              | |||  |    |  |     ||  : |: || |  |:  | || || ||| |   : |:
Db         78 ACACAGACAGCUACCACAUCAGCUUUGCUGGACACUGUCCGAGGAAACAACUCCUUGGUC 137

Qy        140 AATGACCTTGCAAGAAGGCGCATGTACGATACGGCCGTGGAAGAATTTAACGCCCGCGAC 199
              ||:|| |: ||||    | ||  : :|||| || || |: ||||| :::||||| || |||
Db        138 AAUGAUCUAGCAAAGCGUCGUCUUUACGACACAGCGGUUGAAGAGUUUAACGCUCGUGAC 197

Qy        200 CGTAGACCAAAGGTCAACTTTTCCAAAACTATTAGCGAAGAGCAAACGCTTCTAGTCTCC 259
              || || || ||||: |||::::| |||    |: ||||| ||||| ||||:: : |   ||
Db        198 CGCAGGCCCAAGGUGAACUUUUCAAAAGUAAUAAGCGAGGAGCAGACGCUUAUUGCUACC 257

Qy        260 AACGCGTACCCGGAGTTCCAGATTACCTTTTATAATACTCAAAATGCCGTACACAGTTTG 319
                 |||:| || || ::||| |::|| ::::|:|| || |||||:||||: ||     :
Db        258 CGGGCGUAUCCAGAAUUCCAAAUUACAUUUUAUAACACGCAAAAUGCCGUGCAUUCGCUU 317

Qy        320 GCTGGAGGTTTGAGAGCATTAGAATTGGAATATCTGATGCTACAAGTTCCCTATGGATCG 379
              || || || ::| || | ::|||| :||||:|:|:||:| : ||| ::|||:| |||:|
Db        318 GCAGGUGGAUUGCGAUCUUUAGAACUGGAAUAUCUGAUGAUGCAAAUUCCCUACGGAUCA 377

Qy        380 CCGACATATGATATAGGTGGGAACTTTGCAGCACATTTGTTCAAAGCAGGGATTACGTG 439
                 ||| :|:|| |:||| ||||| :::||| | ||: :|::||| ||   | |   :| |:
Db        378 UUGACUUAUGACAUAGGCGGGAAUUUUGCAUCGCAUCUGUUCAAGGGACGAGCAUAUGUA 437

Qy        440 CATTGCTGTATGCCCAATCTGGACATACGAGATATAATGAGGCACGAAGGACAAAAGGAC 499
              || :||:| |:||||||| |:|||| : ||||| |: |:| |||||||||| || || |||
Db        438 CACUGCUGCAUGCCCAACCUGGACGUUCGAGACAUCAUGCGGCACGAAGGCCAGAAAGAC 497

Qy        500 TCAATTGAGATGTATTTGTCCAGATTGTCTCGTTCTAACAAGGTAATTCCTGAGTTTCAA 559
                 |::||  : :|  : :| ||  :      |       ||   | : ||  | :: |||
Db        498 AGUAUUGAACUAUACCUUUCUAGGCUAGAGAGAGGGGGAAAACAGUCCCCAACUUCCAA 557

Qy        560 AGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAAGTCTGCTGCTCTAAAACTTTT 619
              | ||| || ::: |||| :| ||||||   :||  | || |    |:|    || ||:::
Db        558 AAGGAAGCAUUUGACAGAUACGCAGAAAUUCCUGAAGACGCUGUCUGUCACAAUACUUUC 617

Qy        620 CAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGAAGATACGCTGTTGCTCTGCAC 679
              |||      |||   || |||     || |     || |||   :| ||  ::|| |: |||
Db        618 CAGACAAUGCGACAUCAGCCGAUGCAGCAAUCAGGCAGAGUGUAUGCCAUUGCGCUACAC 677

Qy        680 AGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCGTTAATATCTAAGAATATACAT 739
              ||  : :|:|| |: || |   |:|||:: || || ||   :  :     || ||: : ||:
Db        678 AGCAUAUAUGACAUACCAGCCGAUGAGUUCGGGGCGGCACUCUUGAGGAAAAAUGUCCAU 737

Qy        740 GTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTACTAGACCAGACGGAGGTTACG 799
                 :| :|:|| ||:: |   ::  | ||     :  : |: ||  |  |  | |: |
Db        738 ACGUGCUAUGCCGCUUUCCACUUCUCCGAGAACCUGCUUCUUGAAGAUUCAUACGUCAAU 797

Qy        800.CTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGATGATGTTTCTTTTTTCTTTGCT 859
                :  | ||||:   |||   :::      | || || ||  |  : | ::::  :::||
Db        798 UUGGACGAAAUCAACGCGUGUUUUUCGCGCGAUGGAGACAAGUUGACCUUUUCUUUUGCA 857

Qy        860 GATGAAAGTACTTTAAATTATAGTCATAAATACAAAAATATCTTGCATTATGTAGTTAAA 919
                 || ||:||: : ||::|: |:||:|  :|     ||:|:  :  | :|:|:     |||
Db        858 UCAGAGAGUACUCUUAAUUAUUGUCAUAGUUAUUCUAAUAUUCUUAAGUAUGUGUGCAAA 917

Qy        920 TCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAGGAATTTTTAGTCACTAGGGTT 979
               |::||:: || || :|:| :|||   |:::|| : ||||| :::::||:||| || |::
Db        918 ACUUACUUCCCGGCCUCUAAUAGAGAGGUUUACAUGAAGGAGUUUUUAGUCACCAGAGUU 977

Qy        980 AATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTATATTCTGTACAAGAGTGTTAGA 1039
              ||:|| :||::::|:|| ::: | | | :|||:|| : : :: :|:|||| |:|:
Db        978 AAUACCUGGUUUUGUAAGUUUUCUAGAAUAGAUACUUUUCUUUUGUACAAAGGUGUGGCC 1037

Qy       1040 CAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATGGAAGACGCCTTTGCTTACAAG 1099
              ||    | |     ||:||:|| |||:: :|:     || |:|||||||||| :    ::||||
Db       1038 CAUAAAAGUGUAGAUAGUGAGCAGUUUUAUACUGCAAUGGAAGACGCAUGGCAUUACAAA 1097

Qy       1100 AAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTTAGAGACACGGCTTCGGTTAAC 1159
              || ||  : || |:|: ||||| || |||     :| ::    ||   |   | :| |: ||
Db       1098 AAGACUCUUGCAAUGUGCAACAGCGAGAGAAUCCUCCUUGAGGAUUCAUCAUCAGUCAAU 1157

Qy       1160 TTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCGCTGTTTGAGGGTTCTATTACC 1219
              :  :||:: || || |:|| ||| |:||: |: |:|||   : :: ||    ::|: :
Db       1158 UACUGGUUUCCCAAAAUGAGGGAUAUGGUCAUCGUACCAUUAUUCGACAUUUCUUUGGAG 1217

Qy       1220 AGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGTGACTTCGTTTACACAGTGCTT 1279
              |  |  |||| |||  | |  || |:| : |:           || ::||: :  ||||:||::
Db       1218 ACUAGUAAGAGGACGCGCAAGGAAGUCUUAGUGUCCAAGGAUUUCGUGUUUACAGUGCUU 1277

Qy       1280 AATCATATCAGAACATATCAAGCCAAAGCGTTAACTTACCAGAACGTATTATCTTTCGTG 1339
              || || |:  |||||:| || || |||||   : || :||    || |: :: :|   : |:
Db       1278 AACCACAUUCGAACAUACCAGGCGAAAGCUCUUACAUACGCAAAUGUUUGUCCCUUGUC 1337

Qy       1340 GAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACTGCTAGGTCTGAATGGATGTA 1399
              || :| |:  ||:|  | |: |: |: || ||:|: || || |||:| |||:||||:|:
Db       1338 GAAUCGAUUCGAUCGAGGGUAAUCAUUAACGGUGUGACAGCGAGGUCCGAAUGGGAUGUG 1397

Qy       1400 GATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTCTTGCAGACTAAGCTGGCTGCG 1459
              || ||| |   :   : ||| ||::|:| |:||| :: : | :||| ||:||||: || |
Db       1398 GACAAAUCUUUGUUACAAUCCUUGUCCAUGACGUUUUACCUGCAUACUAAGCUUGCCGUU 1457

Qy       1460 CTTCAAGACGATATAGTAATGGGAAAGTTTCGGTGCTTGGATAAGACCACTTCTGAACTT 1519
              |:  | || ||  :| : |:  | |||:::  |    |       || ||     :    | | :
Db       1458 CUAAAGGAUGACUUACUGAUUAGCAAGUUUAGUCUCGGUUCGAAAACGGUGUGCCAGCAU 1517

Qy       1520 ATTTGGGATGAGGTGGGCAAATTTTTGGAAACGTTTTCCCCACTATCAAAGAGAGATTG 1579
               : :||||:|||  :           :::|| ||||  :: |||  |  : |||||||||  :
Db       1518 GUGUGGGAUGAGAUUUCGCUGGCGUUUGGGAACGCAUUUCCCUCCGUGAAAGAGAGACUC 1577

Qy       1580 GTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTGAAGATCAAGATCCCAGATCTG 1639
               :|| ||||||| :: :     |:     |    | ||  :  |||:|| | : || ||:|:
Db       1578 UUGAACAGGAAACUUAUCAGAGUGGCAGGCGACGCAUUAGAGAUCAGGGUGCCUGAUCUA 1637

Qy       1640 TATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACCAAGTCTGAGGAGTTACCGCAT 1699
              :|:|: || :    | ||||| :: |:   |:|| :|||       :|:| |||   : ||
Db       1638 UAUGUGACCUUCCACGACAGAUUAGUGACUGAGUACAAGGCCUCUGUGGACAUGCCUGCG 1697

Qy       1700 CTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATGTACGACGCGTTATCAGAATTA 1759
              |: || |: | |||| |   : |||||| | ||     |:|:|| | ||  : :|||| ::|
Db       1698 CUUGACAUUAGGAAGAAGAUGGAAGAAACGGAAGUGAUGUACAAUGCACUUUCAGAGUUA 1757

Qy       1760 TCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAGTTCAAAGACATGTGCAAGGCT 1819
              :|  :  : | ||   |:|| || ::|||: : |       ::      | |:|:|| |  |:
Db       1758 UCGGUGUUAAGGGAGUCUGACAAAUUCGAUGUUGAUGUUUUUCCCAGAUGUGCCAAUCU 1817

Qy       1820 TTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTTGCAGTGGCCGAGAATAGAAGC 1879
              :: || |::   ||       ||||||     |: |: |: || |:        ||:   |||
Db       1818 UUGGAAGUUGACCCAAUGACGGCAGCGAAGGUUAUAGUCGCGGUCAUGAGCAAUGAGAGC 1877

Qy       1880 GGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAATGTGGCTAAGGCTCT------T 1933
              ||: : ||:|: || :::||     || || |||| |||:|: ||     ||: :      :
Db       1878 GGUCUGACUCUCACAUUUGAACGACCUACUGAGGCGAAUGUUGCGCUAGCUUUACAGGAU 1937

Qy       1934 AAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCGACATCCGAAGAGGTGAACGTA 1993
                ||   | ||| :| || |  |    :      ::     | | |    | || |
Db       1938 CAAGAGAAGGCUUCAGAAGGUGCAUUGGUAGUUACCUCAAGAGAAGUUGAAGAACCGUCC 1997

Qy       1994 AATAAATTTTCTATTGCTGAGAAAGGGAGATTGCCTGTGTGTGCAGAAAGTCATGGTTTG 2053
              | ||    ::| |: ||       || |  |     |  |:   |   |  |:  :  |
Db       1998 AUGAAGGGUUCGAUGGCCAGAGGAGAGUUACAAUUAGCUGGUCUUGCUGGAGAUCAUCCG 2057

Qy       2054 ACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTCAACGATTTCCATAAGGCTTGC 2113
                |    |  | :    || || ||||| : |||:|  :   |   | :: ||:| |||
```

```
Db       2058 GAGUCGUCCUAUUCUAAGAACGAGGAGAUAGAGUCUUUAGAGCAGUUUCAUAUGGCGACG 2117

Qy       2114 GTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTCTACACTGGCTCACTCAAAGTT 2173
              |  ||:    : |::   ||||| |:|   :|| ::|: :|||| ||  |  : ||||::
Db       2118 GCAGAUUCGUUAAUUCGUAAGCAGAUGAGCUCGAUUGUGUACACGGGUCCGAUUAAAGUU 2177

Qy       2174 CAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCGTTGTCCGCCACTGTATCAAAT 2233
              || ||||:||| |||: : : || ||  :|| ||| :|  : :| ||  | |: :| ||:
Db       2178 CAGCAAAUGAAAAACUUUAUCGAUAGCCUGGUAGCAUCACUAUCUGCUGCGGUGUCGAAU 2237

Qy       2234 CTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCTGATTCCAGGGAGAAAGTTGGT 2293
              |:   ||||   |: || ||:  ||  |     :||   :||  || |  | ||  ::|| 
Db       2238 CUCGUCAAGAUCCUCAAAGAUACAGCUGCUAUUGACCUUGAAACCCGUCAAAAGUUUGGA 2297

Qy       2294 GTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCTGCGGCCAAAGGTCATTCATGG 2353
              |: : |||:|:  | :  |  |||:|| :  :||||||  |||||||  |:||: ||:||
Db       2298 GUCUUGGAUGUUGCAUCUAGGAAGUGGUUAAUCAAACCAACGGCCAAGAGUCAUGCAUGG 2357

Qy       2354 GGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCACTTCTATCTTATGAAGGAGAT 2413
              || |::|:        ||  | ||||      :   || |:: :    :|:|| |   | 
Db       2358 GGUGUUGUUGAAACCCACGCGAGGAAGUAUCAUGUGGCGCUUUUGGAAUAUGAUGAGCAG 2417

Qy       2414 AGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTATCATCTGATACAATGGTATAT 2473
               |  :||:|||       || :|||| || |: ||:|:    :|:||  |  : |: :|:
Db       2418 GGUGUGGUGACAUGCGAUGAUUGGAGAAGAGUAGCUGUUAGCUCUGAGUCUGUUGUUUAU 2477

Qy       2474 TCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATGAGAGACGGTGAACCCCACGAA 2533
              :| || |: || || |:|  || :|:| | | |    :  || |||| ||||| || |  
Db       2478 UCCGACAUGGCGAAACUCAGAACUCUGCGCAGACUGCUUCGAAACGGAGAACCGCAUGUC 2537

Qy       2534 CCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGTTGTGGAAAGTACAAAGGAGAT 2593
                :|  |||||| : |: |::|:||| || |: || || :|:|||||   ||||| |  :
Db       2538 AGUAGCGCAAAGGUUGUUCUUGUGGACGGAGUUCCGGGCUGUGGAAAAACCAAAGAAAUU 2597

Qy       2594 TTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTTCCTGGAAAACAAGCTGCTGCT 2653
               ::   ||  :: |: ::||:|| ||: : |: :: |: ||:|| || ||||| || |  
Db       2598 CUUUCCAGGGUUAAUUUUGAUGAAGAUCUAAUUUUAGUACCUGGGAAGCAAGCCGCGGAA 2657

Qy       2654 ATGATCAGAAGAAGGGCTAATTCATCTGGACTGATAAGAGCCACAATGGACAATGTGAGA 2713
              |:||:||||||| | || ||::| :| ||  : |:    ||||| | |||||| |: | |
Db       2658 AUGAUCAGAAGACGUGCGAAUUCCUCAGGGAUUAUUGUGGCCACGAAGGACAACGUUAAA 2717

Qy       2714 ACGGTAGATTCACTTCTAATGCATCCAAAACCGCGATCACA---------CAAGAGGCTT 2764
              || |: ||::|  :  : |:| |:          |  |||          ||||||| : 
Db       2718 ACCGUUGAUUCUUUCAUGAUGAAUUUUGGGAAAAGCACACGCUGUCAGUUCAAGAGGUUA 2777

Qy       2765 TTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTTAACTTCCTGGTGCTTATCTCT 2824
              :: |::||:||||||::||:| :||| || ||::|:|::|| :: |: |:|   |: :| 
Db       2778 UUCAUUGAUGAAGGGUUGAUGUUGCAUACUGGUUGUGUUAAUUUUCUUGUGGCGAUGUCA 2837

Qy       2825 GGTTGCGACATCGCATACATTTACGGAGATACACAGCAGATTCCTTTCATTAACAGAGTT 2884
                 :|||| |: |||:|  :::||||||| ||||||||||::|| : ||: || ||||::
Db       2838 UUGUGCGAAAUUGCAUAUGUUUACGGAGACACACAGCAGAUUCCAUACAUCAAUAGAGUU 2897

Qy       2885 CAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAAGTGGATGAAGTTGAGATGAGG 2944
                    ::||||:| |||   ||::::|  ||  :| |||: || || |: ||||   | 
Db       2898 UCAGGAUUCCCGUACCCCGCCCAUUUUGCCAAAUUGGAAGUUGACGAGGUGGAGACACGC 2957

Qy       2945 AGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTCCTACAATCGAAGTACGAAGGA 3004
              || || || |:  | :||||||  ||:|: |    ::  |:  |   ||  :| || || 
Db       2958 AGAACUACUCUCCGUUGUCCAGCCGAUGUCACACAUUAUCUGAACAGGAGAUAUGAGGGC 3017

Qy       3005 GCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCATCTGAGATGATAGGCGGTAAG 3064
                 |: |  | |||::|  |:  ||   :| |: :|    ||||:| : |||||    
Db       3018 UUUGUCAUGAGCACUUCUUCGGUUAAAAAGUCUGUUUCGCAGGAGAUGGUCGGCGGAGCC 3077

Qy       3065 GGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGGAAAATTGTAACTTTCACTCAGGCT 3124
              |  |:  : ||     : :| |||||  :  | || || |:  : ||::: || ||  | 
Db       3078 GCCGUGAUCAAUCCGAUCUCAAAACCCUUGCAUGGCAAGAUCCUGACUUUUACCCAAUCG 3137

Qy       3125 GATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTGAACACCGTTCATGAGATCCAA 3184
              ||:|||   |   :        |  || :|:    |:|:  |||| |: ||:||  : |||
Db       3138 GAUAAAGAAGCUCUGCUUUCAAGAGGGUAUUCAGAUGUUCACACUGUGCAUGAAGUGCAA 3197

Qy       3185 GGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACGGCAACTCCACTGACTCTGATT 3244
              || || |  :     ||:|: :| |: |: || :: ||  | || ||| :  |  : |::
Db       3198 GGCGAGACAUACUCUGAUGUUUCACUAGUUAGGUUAACCCCUACACCAGUCUCCAUCAUU 3257

Qy       3245 TCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGACACACAAAGAGCTTCAAATAT 3304
               |         ||| ||:|:: : |:|||  :| | || |||||        :||| :| 
Db       3258 GCAGGAGACAGCCCACAUGUUUUGGUCGCAUUGUCAAGGCACACCUGUUCGCUCAAGUAC 3317

Qy       3305 TACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGTGATTTGTCTTCTTTAAGCTCC 3364
              :|||| |: |:  : ||:||:::||:    |: |::|| ||: :         : |||:| 
Db       3318 UACACUGUUGUUAUGGAUCCUUUAGUUAGUAUCAUUAGAGAUCUAGAGAAACUUAGCUCG 3377

Qy       3365 TTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGATAGCAATTACAGATGGATGCA 3424
              : | : ::||| |:|:|:|: ||: || ||||| |    |:|||||::|||||: ||  | 
Db       3378 UACUUGUUAGAUAUGUAUAAGGUCGAUGCAGGAACACAAUAGCAAUUACAGAUUGACUCG 3437

Qy       3425 GTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAATCAGGAGACTTTCCAGATCTA 3484
              |:|::|||||:|   ||:|: :::|: ||| | || ||  | || ||  :: | ||: : 
Db       3438 GUGUUCAAAGGUUCCAAUCUUUUUGUUGCAGCGCCAAAGACUGGUGAUAUUUCUGAUAUG 3497

Qy       3485 CAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACTATACTTAACAAGTATGATGCT 3544
              |||:: :| :| ||:   :| |:||| || || || || |:  : || || : :||:||:
Db       3498 CAGUUUUACUAUGAUAAGUGUCUCCCAGGCAACAGCACCAUGAUGAAUAAUUUUGAUGCU 3557

Qy       3545 GTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAGGATTGTGTTCTTGATTTTTCC 3604
              |::||||:||||::   :|| | :    : ||:|: || |||::|  :  :  ||: : :| 
Db       3558 GUUACCAUGAGGUUGACUGACAUUUCAUUGAAUGUCAAAGAUUGCAUAUUGGAUAUGUCU 3617

Qy       3605 AAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTAGAGCCAGTTTTGCGTACCGCG 3664
              ||   : ::|    ||| |||||    |    |   |:|   ||  :  : || || |||
Db       3618 AAGUCUGUUCGUGCGCCUAAGGAUCAAAUCAAACCACUAAUACCUAUGGUACGAACGGCG 3677

Qy       3665 GCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTGGTTGCAATGATTAAAAGAAAT 3724
              || |||  |||| |     | ||||:| : |||||: : |: || |:||::|||||||| 
Db       3678 GCAGAAAUGCCACGCCAGACUGGACUAUUGGAAAAUUUAGUGGCGAUGAUUAAAAGAAAC 3737

Qy       3725 TTCAACGCACCAGACCTGACGGGGACGATTGACATTGAGAGCACCGCATCTGTTGTAGTA 3784
              :: ||||||||| ||  :| | || |  |::|| |::|| |  || |||:|: : |: |:|
Db       3738 UUUAACGCACCCGAGUUGUCUGGCAUCAUUGAUAUUGAAAAUACUGCAUCUUUGGUUGUA 3797

Qy       3785 GATAAGTTTTTTGATAGCTATTTTATTAAAAAAGAAAAATACACAAAAAATATTGCTGGA 3844
              ||:|||::::::||:|| :|:::  ::||| || ||| | |  |||| || | :| :   
Db       3798 GAUAAGUUUUUUGAUAGUUAUUUGCUUAAAGAAAAAAGAAAACCAAAUAAAAAUGUUUCU 3857

Qy       3845 GTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAACAGGAAAGAAGTACTATTGGAC 3904
               :| : |  |  || :|  : |  |||:||:: |||||    | || | |:|  | : | |
Db       3858 UUGUUCAGUAGAGAGUCUCUCAAUAGAUGGUUAGAAAAGCAGGAACAGGUAACAAUAGGC 3917

Qy       3905 GACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATCGATCAGTACAAGCACATGATC 3964
               |  : ||  | :   |:::    ||: :||| ||  : ||:|||:|||  ||||:||: 
Db       3918 CAGCUCGCAGAUUUUGAUUUUGUGGAUUUGCCAGCAGUUGAUCAGUACAGACACAUGAUU 3977

Qy       3965 AAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAGAATGAATACCCTGCTCTGCAA 4024
              || || |||||| ||||| || ::||||  ::|||: || |   || :||||  ||: :||| 
Db       3978 AAAGCACAACCCAAACAAAAGUUGGACACUUCAAUCCAAACGGAGUACCCGGCUUUGCAG 4037

Qy       4025 ACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTGGCCGGTTTCT---CAGAGCTT 4081
              || |::|: :||||::| ||  |||:||| |  |: :: | |   :: :     ||||::
Db       4038 ACGAUUGUGUACCAUUCAAAAAAGAUCAAUGCAAUAUUCGGCCCGUUGUUUAGUGAGCUU 4097

Qy       4082 ACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTTCTTTTCTTTACTAGGAAAACT 4141
              || |||    : |: ||     ::||::| |  |  ::: : :: :: || || || || 
Db       4098 ACUAGGCAAUUACUGGACAGUGUUGAUUCGAGCAGAUUUUUGUUUUUCACAAGAAAGACA 4157

Qy       4142 CCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCGCACGTTCCTATGGATGTGTTA 4201
              ||||  ||||:: | || :: ::|   ||:|:||||   || |: || |:|||:|: :: 
Db       4158 CCAGCGCAGAUUGAGGAUUUCUUCGGAGAUCUCGACAGUCAUGUGCCGAUGGAUGUCUUG 4217

Qy       4202 GAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAGTTTCATTGTGCTGTAGAGTAT 4261
              || |:|||:|: :| || :| || || :| ||||| || : || :|:|| |:||| :| 
Db       4218 GAGCUGGAUAUAUCAAAAUACGACAAAUCUCAGAAUGAAUUCCACUGUGCAGUAGAAUAC 4277
```

```
Qy   4262 GAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCCGAAGTGTGGAAACAAGGGCAC 4321
          || |: :||  ||||::|||: :  | || :: ::||  ||||: :|||||||||||||
Db   4278 GAGAUCUGGCGAAGAUUGGGUUUUGAAGACUUCUUGGGAGAAGUUUGGAAACAAGGGCAU 4337

Qy   4322 AGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAGACATGTCTGTGGTATCAAAGG 4381
          || || || ||  : |||||::| |  || || |: || || :|  : :||:|:|||||
Db   4338 AGAAAGACCACCCUCAAGGAUUAUACCGCAGGUAUAAAAACUUGCAUCUGGUAUCAAAGA 4397

Qy   4382 AAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTTATAATAGCAGCTTGCTTGGGT 4441
          || ||||| || |: || || ::||: || || ||:|: |: |: || || :| ::||
Db   4398 AAGAGCGGGGACGUCACGACGUUCAUUGGAAACACUGUGAUCAUUGCUGCAUGUUUGGCC 4457

Qy   4442 TCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTTTGTGGAGACGATTCCGTTTTG 4501
          :| |:| : ||||:||| ||  : |: ||||| || ::::| || |||||:    :  :|
Db   4458 UCGAUGCUUCCGAUGGAGAAAAUAAUCAAAGGAGCCUUUUGCGGUGACGAUAGUCUGCUG 4517

Qy   4502 TATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCATGTGCTAATCTCATGTGGAAT 4561
          :| :::||||||||::  || :: || ||  : ||    :  || ||:|: |:|:||||:
Db   4518 UACUUUCCAAAGGGUUGUGAGUUUCCGGAUGUGCAACACUCCGCGAAUCUUAUGUGGAAU 4577

Qy   4562 TTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTTTGTGGTAGATACATCATACAC 4621
          :::|| || ||||:|:  | |||   |:| || :||::::| || |||:|  : |:|||
Db   4578 UUUGAAGCAAAACUGUUUAAAAAACAGUAUGGAUACUUUUGCGGAAGAUAUGUAAUACAU 4637

Qy   4622 CATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAGTTGATCTCCAAACTTGGGGCA 4681
          || || |  |||   |: |:|:|::| ||:||  : |||::||:|   ||||::|| ||
Db   4638 CACGACAGAGGAUGCAUUGUGUAUUACGAUCCCCUAAAGUUGAUCUCGAAACUUGGUGCU 4697

Qy   4682 AAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGGGTGTCTTTGTGCGATGTTGCT 4741
          ||||| |:||||||::  || |||:: || |||:: ||   |:|: : :| ||:|::||:
Db   4698 AAACACAUCAAGGAUUGGGAACACUUGGAGGAGUUCAGAAGGUCUCUUUGUGAUGUUGCU 4757

Qy   4742 TGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTGAACGCAGCTATCAAGGAGGTT 4801
            ::|| :    || :|    :     :   | ||| :| |||  ||: :   |||||::
Db   4758 GUUUCGUUGAACAAUUGUGCGUA---UUACACACAGUUGGACGACGCUGUAUGGGAGGUU 4814

Qy   4802 CATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGTGTTAACAAATTTTTGTGTGAT 4861
          ||:|| |||||   :   ||::||:::| :: :||  |: :    || : :::|: :||:
Db   4815 CAUAAGACCGCCCCUCCAGGUUCGUUUGUUUAUAAAAGUCUGGUGAAGUAUUUGUCUGAU 4874

Qy   4862 AAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAGTCTCAGAGATACTGTCAAAAT 4921
          ||| :: : :::|||| ::::::: :| |:|||: :   : : | ||  |  |: || |:
Db   4875 AAAGUUCUUUUUAGAAGUUUGUUUAUAGAUGGCUCUAGUUGUUAAAGGAAAAGUGAAUAU 4934

Qy   4922 TAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACTTCCGGCATTCATGACTAAGGT 4981
           |  |||:: |: || |: :| |||  |||  |||:  : ||| |  :  : ||    |:
Db   4935 CAAUGAGUUUAUCGACCUGUCAAAAAUGGAGAAGAUCUUACCGUCGAUGUUUACCCCUGU 4994

Qy   4982 CAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGCTGTTAAGAATGATAGTCTTTC 5041
           |||||:|::|     :| |  |:| | || |: | || :  : ||||:||     : :|
Db   4995 AAAGAGUGUUAUGUGUUCCAAAGUUGAUAAAAUAAUGGUUCAUGAGAAUGAGUCAUUGUC 5054

Qy   5042 TGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAAAGGGTATGTGTGCTTAGCTGA 5101
           || |:  |  : |::||||| |::||| :  :: | |  || :| |: :| ::||| |
Db   5055 AGAGGUGAACCUUCUUAAAGGAGUUAAGCUUAUUGAUAGUGGAUACGUCUGUUUAGCCGG 5114

Qy   5102 TTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTGCCGTGGTGGTGTCAGTGTTTG 5161
          :::||: |:  | || |||:||||  : || || || :|| | || ||:|: || |: :|
Db   5115 UUUGGUCGUCACGGGCGAGUGGAACUUGCCUGACAAUUGCAGAGGAGGUGUGAGCGUGUG 5174

Qy   5162 TATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAACGCTGGGTGCGTATCACGCCCC 5221
          : : |: || || || |:| ||||     | || || || |: ||  | :|  || |  |
Db   5175 UCUGGUGGACAAAAGGAUGGAAAGAGCCGACGAGGCCACUCUCGGAUCUUACUACACAGC 5234

Qy   5222 TGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAATTATTCAATAACATCCGAGGA 5281
           ||:   || || |  :::   :: ||| :  : || ||::|: | |:||  || ||||
Db   5235 AGCUGCAAAGAAAAGAUUUCAGUUCAAGGUCGUUCCCAAUUAUGCUAUAACCACCCAGGA 5294

Qy   5282 TGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAAAGGAGTGGCTATGGAAGAAGG 5341
           ||   |||  ||   :||||||: ::||: ||:|: | |   |:|   |:|  ||  ||
Db   5295 CGCGAUGAAAAACGUCUGGCAAGUUUUAGUUAAUAUUAGAAAUGUGAAGAUGUCAGCGGG 5354

Qy   5342 ATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGTAGTACATAAAAATAATGTAAG 5401
           : |:|:||  : :|: :||||:: |: :|  : :|: : |:  |:| |||:||: :||
Db   5355 UUUCUGUCCGCUUUCUCUGGAGUUUGUGUCGGUGUGUAUUGUUUAUAGAAAUAAUAUAAA 5414

Qy   5402 AAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGGCTCGCCAATTGAACTCACTGA 5461
          |  |||:::||| ||    |::   |  |:|| ||||||   ||| |: ||||: || ||
Db   5415 AUUAGGUUUGAGAGAGAAGAUUACAAACGUGAGAGACGGAGGGCCCAUGGAACUUACAGA 5474

Qy   5462 AAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGCTGTGAAACTCGAAAAGGTTCC 5521
          | | |: |::|| |||::| :||| || |: || |:| |  : |  |: | |||| ::|
Db   5475 AGAAGUCGUUGAUGAGUUCAUGGAAGAUGUCCCUAUGUCGAUCAGGCUUGCAAAGUUUCG 5534

Qy   5522 GG------------AAAACAAAAAAGAAATGGTAGGTAATAATGTTAATAAT-------- 5561
                        |||| |   | |       ||| || ||:  :| :||:
Db   5535 AUCUCGAACCGGAAAAAAGAGUGAUGUCCGCAAAGGGAAAAAUAGUAGUAAUGAUCGGUC 5594

Qy   5562 -------AAGAAAATAAATAACAGTGGTAAGAAGGGTTTTAAAATTGAGGAAATTGAGGA 5614
                 || || |   |:|  | :| :||| |   :     ||:       |   || |
Db   5595 AGUGCCGAACAAGAACUAUAGAAAUGUUAAGGAUUUUGGAGGAAUGAGUUUUAAAAAGAA 5654

Qy   5615 TAATGTAAGTGATGACGAGT---------CTATCGCGTCATCGAGTACGTTTTAATCAAT 5665
          :||: :||  ||:|| || :         |: :|||   |:||  : ||::::|   ||:
Db   5655 UAAUUUAAUCGAUGAUGAUUCGGAGGCUACUGUCGCCGAAUCGGAUUCGUUUUA---AAU 5711

Qy   5666 ATGCCTTATACAATCAACTCTCCGAGCCAATTTGTTTACTTATCTTCCGCTTACGCAGAT 5725
          |:| |::| |  |:||   |:||    || :: |: : |:: :| :| ||  :  || ||
Db   5712 AUGUCUUACAGUAUCACUACUCCAUCUCAGUUCGUGUUCUUGUCAUCAGCGUGGGCCGAC 5771

Qy   5726 CCTGTGCAGCTGATCAATCTGTGTACAAATGCATTGGGTAACCAGTTTCAAACGCAACAA 5785
          ||  :  ||  : |: ||: : :|:|| ||:|| :: || || |||:::||||| ||||||
Db   5772 CCAAUAGAGUUAAUUAAUUUAUGUACUAAUGCCUUAGGAAAUCAGUUUCAAACACAACAA 5831

Qy   5786 GCTAGGACAACAGTCCAACAGCAATTTGCGGATGCCTGGAAACCTGTGCCTAGTATGACA 5845
          ||: | ||    |: |||   |||::    || |  :|||||||:   ||     : ||
Db   5832 GCUCGAACUGUCGUUCAAAGACAAUUCAGUGAGGUGUGGAAACCUUCACCACAAGUAACU 5891

Qy   5846 GTGAGATTTCCTGCATCGGATTTCTATGTGTATAGATATAATTCGACGCTTGATCCGTTG 5905
          |: || :: ||:|     || ::  | |:|:| || :| ||: ||    : || ||| :
Db   5892 GUUAGGUUCCCUGACAGUGACUUUAAGGUGUACAGGUACAAUGCGGUAUUAGACCCGCUA 5951

Qy   5906 ATCACGGCGTTATTAAATAGCTTTGATACTAGAAATAGAATAATAGAGGTTGATAATCAA 5965
           :||| ||  : ::|  :   :: || ||:|||||:||||:||:||| |::|| ||:||
Db   5952 GUCACAGCACUGUUAGGUGCAUUCGACACUAGAAAUAGAAUAAUAGAAGUUGAAAAUCAG 6011

Qy   5966 CCCGCACCGAATACTACTGAAATCGTTAACGCGACTCAGAGGGTAGACGATGCTACTGTA 6025
           |    || |  ||: | ||||   :  | || ||:|  || |:|||||| || || |:
Db   6012 GCGAACCCCACGACUGCCGAAACGUUAGAUGCUACUCGUAGAGUAGACGACGCAACGGUG 6071

Qy   6026 GCTATAAGGGCTTCAATCAATAATTTGGCTAATGAACTGGTTCGTGGAACTGGCATGTTC 6085
          || |:||||    | |: ||:||:::       ||| :| :  | ||||| ||     :
Db   6072 GCCAUAAGGAGCGCGAUAAAUAAUUUAAUAGUAGAAUUGAUCAGAGGAACCGGAUCUUAU 6131

Qy   6086 AATCAAGCAGGCTTTGAGACTGCTAGTGGACTTGTCTGGACCACAACTCCGGCTACTTAG 6145
          ||:|        :: ||||   |:  :||  : |: :||||| |   :||  || || :||
Db   6132 AAUCGGAGCUCUUUCGAGAGCUCUUCUGGUUUGGUUUGGACCUCUGGUCCUGCAACCUAG 6191

Qy   6146 CTATT 6150
          | |::
Db   6192 CAAUU 6196
```

```
RESULT 9
US-09-466-422-2
; Sequence 2, Application US/09466422
; Patent No. 6303779
;   GENERAL INFORMATION:
;        APPLICANT: GARGER, STEPHEN
;                   HOLTZ, R. BARRY
;                   McCULLOCH, MICHAEL
;                   TURPEN, THOMAS
;        TITLE OF INVENTION: A PROCESS FOR ISOLATING AND
;                            PURIFYING VIRUSES SOLUBLE PROTEINS AND PEPTIDES
;                            FROM PLANT SOURCES
;        NUMBER OF SEQUENCES: 5
```

```
;        CORRESPONDENCE ADDRESS:
;             ADDRESSEE: Howrey & Simon
;             STREET: 1299 Pennsylvania Avenue N.W.
;             CITY: Washington
;             STATE: DC
;             COUNTRY: USA
;             ZIP: 20004
;        COMPUTER READABLE FORM:
;             MEDIUM TYPE: Diskette
;             COMPUTER: IBM Compatible
;             OPERATING SYSTEM: DOS
;             SOFTWARE: FastSEQ for Windows Version 2.0
;        CURRENT APPLICATION DATA:
;             APPLICATION NUMBER: US/09/466,422
;             FILING DATE: 17-Dec-1999
;             CLASSIFICATION: <Unknown>
;        PRIOR APPLICATION DATA:
;             APPLICATION NUMBER: 09/037,751
;             FILING DATE: <Unknown>
;        ATTORNEY/AGENT INFORMATION:
;             NAME: Halluin, Albert P
;             REGISTRATION NUMBER: 25,277
;             REFERENCE/DOCKET NUMBER: 00801.0140.999
;        TELECOMMUNICATION INFORMATION:
;             TELEPHONE: 650-463-8109
;             TELEFAX: 650-463-8400
;             TELEX: <Unknown>
;   INFORMATION FOR SEQ ID NO: 2:
;        SEQUENCE CHARACTERISTICS:
;             LENGTH: 6439 base pairs
;             TYPE: nucleic acid
;             STRANDEDNESS: single
;             TOPOLOGY: unknown
;        MOLECULE TYPE: Genomic RNA
;        SEQUENCE DESCRIPTION: SEQ ID NO: 2:
US-09-466-422-2

  Query Match             38.6%;  Score 2455.4;  DB 3;  Length 6439;
  Best Local Similarity   44.8%;  Pred. No. 0;
  Matches 2772;  Conservative 1147;  Mismatches 2206;  Indels   60;  Gaps    8;

Qy           20 ACAACAACAATTAAAACAAAAACAACATATTACAAACAACAAACAACAACAATGGCACAC 79
                || |  |  |  |||  | ||||||||:   |   || |   ||||  ||||:|||| ||
Db           18 ACCAACAACAACAAACAACAAACAACAUUACAAUUACUAUUUACAAUUACAAUGGCAUAC 77

Qy           80 ATACAATCTATAATTAGCAACGCCCTTCTTGAAAGCGTGAGTGGTAAAAACACTCTCGTT 139
                | |||  |    |  |     ||  : |: || |  |:  | || || ||| |  : |:
Db           78 ACACAGACAGCUACCACAUCAGCUUUGCUGGACACUGUCCGAGGAAACAACUCCUUGGUC 137

Qy          140 AATGACCTTGCAAGAAGGCGCATGTACGATACGGCCGTGGAAGAATTTAACGCCCGCGAC 199
                ||:|| |: ||||   | ||  : :|||| || || |: ||||| :::||||| || |||
Db          138 AAUGAUCUAGCAAAGCGUCGUCUUUACGACACAGCGGUUGAAGAGUUUAACGCUCGUGAC 197

Qy          200 CGTAGACCAAAGGTCAACTTTTCCAAAACTATTAGCGAAGAGCAAACGCTTCTAGTCTCC 259
                || || || ||||: |||::::| |||   |: ||||| ||||| ||||:: : |   ||
Db          198 CGCAGGCCCAAGGUGAACUUUUCAAAAGUAAUAAGCGAGGAGCAGACGCUUAUUGCUACC 257

Qy          260 AACGCGTACCCGGAGTTCCAGATTACCTTTTATAATACTCAAAATGCCGTACACAGTTTG 319
                   |||:| || || ::||| |::|| ::::|:|| || |||||:||||: ||     :
Db          258 CGGGCGUAUCCAGAAUUCCAAAUUACAUUUUAUAACACGCAAAAUGCCGUGCAUUCGCUU 317

Qy          320 GCTGGAGGTTTGAGAGCATTAGAATTGGAATATCTGATGCTACAAGTTCCCTATGGATCG 379
                || || || ::| || | ::|||| :||||:|:|:||:| : ||| ::|||:| |||:|
Db          318 GCAGGUGGAUUGCGAUCUUUAGAACUGGAAUAUCUGAUGAUGCAAAUUCCCUACGGAUCA 377

Qy          380 CCGACATATGATATAGGTGGGAACTTTGCAGCACATTTGTTCAAAGGCAGGGATTACGTG 439
                  ||| :|:|| |:||| ||||| :::||| | ||: :|::||| ||  | |  :| |:
Db          378 UUGACUUAUGACAUAGGCGGGAAUUUUGCAUCGCAUCUGUUCAAGGGACGAGCAUAUGUA 437

Qy          440 CATTGCTGTATGCCCAATCTGGACATACGAGATATAATGAGGCACGAAGGACAAAAGGAC 499
                || :||:| |:|||||| |:|||| : ||||| |: |:| |||||||||| || || |||
Db          438 CACUGCUGCAUGCCCAACCUGGACGUUCGAGACAUCAUGCGGCACGAAGGCCAGAAAGAC 497

Qy          500 TCAATTGAGATGTATTTGTCCAGATTGTCTCGTTCTAACAAGGTAATTCCTGAGTTTCAA 559
                   |::||  : :|  : :| ||  :     |       ||   | : ||  | :: |||
Db          498 AGUAUUGAACUAUACCUUUCUAGGCUAGAGAGAGGGGGGAAAACAGUCCCCAACUUCCAA 557

Qy          560 AGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAAGTCTGCTGCTCTAAAACTTTT 619
                | ||| || ::: |||| :| ||||||  :||  | || |    |:|    || ||:::
Db          558 AAGGAAGCAUUUGACAGAUACGCAGAAAUUCCUGAAGACGCUGUCUGUCACAAUACUUUC 617

Qy          620 CAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGAAGATACGCTGTTGCTCTGCAC 679
                |||      |||   || |||    || |    || |||   :| ||  ::|| |: |||
Db          618 CAGACAAUGCGACAUCAGCCGAUGCAGCAAUCAGGCAGAGUGUAUGCCAUUGCGCUACAC 677

Qy          680 AGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCGTTAATATCTAAGAATATACAT 739
                ||  : :|:|| |: || |   |:|||:: || || ||  :  :    || ||: : ||:
Db          678 AGCAUAUAUGACAUACCAGCCGAUGAGUUCGGGGCGGCACUCUUGAGGAAAAAUGUCCAU 737

Qy          740 GTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTACTAGACCAGACGGAGGTTACG 799
                   :| :|:|| ||:: |   ::  | ||     :  : |: ||  |  |  | |: |
Db          738 ACGUGCUAUGCCGCUUUCCACUUCUCCGAGAACCUGCUUCUUGAAGAUUCAUACGUCAAU 797

Qy          800 CTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGATGATGTTTCTTTTTTCTTTGCT 859
                 :  | ||||:   |||   :::     | || || ||  |  :  | ::::  :::||
Db          798 UUGGACGAAAUCAACGCGUGUUUUUCGCGCGAUGGAGACAAGUUGACCUUUUCUUUUGCA 857

Qy          860 GATGAAAGTACTTTAAATTATAGTCATAAATACAAAAATATCTTGCATTATGTAGTTAAA 919
                   || ||:||: : ||::|: |:||:|  :|    ||:|:  :  | :|:|:    |||
Db          858 UCAGAGAGUACUCUUAAUUAUUGUCAUAGUUAUUCUAAUAUUCUUAAGUAUGUGUGCAAA 917

Qy          920 TCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAGGAATTTTTAGTCACTAGGGTT 979
                 |::||:: || || :|:| :|||   |:::|| : ||||| :::::||:||| || |::
Db          918 ACUUACUUCCCGGCCUCUAAUAGAGAGGUUUACAUGAAGGAGUUUUUAGUCACCAGAGUU 977

Qy          980 AATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTATATTCTGTACAAGAGTGTTAGA 1039
                ||:|| :||::::|:|| ::: | | | :|||:|| : : :: :|:||||  |:|:
Db          978 AAUACCUGGUUUUGUAAGUUUUCUAGAAUAGAUACUUUUCUUUUGUACAAAGGUGUGGCC 1037

Qy         1040 CAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATGGAAGACGCCTTTGCTTACAAG 1099
                ||   | |    ||:||:|| |||:: :|:   || |:||||||||| :    ::||||
Db         1038 CAUAAAAGUGUAGAUAGUGAGCAGUUUUAUACUGCAAUGGAAGACGCAUGGCAUUACAAA 1097

Qy         1100 AAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTTAGAGACACGGCTTCGGTTAAC 1159
                || ||  : || |:|: |||||  || |||    :| ::   ||  |  | :| |: ||
Db         1098 AAGACUCUUGCAAUGUGCAACAGCGAGAGAAUCCUCCUUGAGGAUUCAUCAUCAGUCAAU 1157

Qy         1160 TTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCGCTGTTTGAGGGTTCTATTACC 1219
                :  :||:: || || |:|| ||| |:||: |: |:|||  : :: ||   ::|: :
Db         1158 UACUGGUUUCCCAAAAUGAGGGAUAUGGUCAUCGUACCAUUAUUCGACAUUUCUUUGGAG 1217

Qy         1220 AGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGTGACTTCGTTTACACAGTGCTT 1279
                |  |  |||| |||  | |  || |:| : |:       || ::||: :  ||||:||::
Db         1218 ACUAGUAAGAGGACGCGCAAGGAAGUCUUAGUGUCCAAGGAUUUCGUGUUUACAGUGCUU 1277

Qy         1280 AATCATATCAGAACATATCAAGCCAAAGCGTTAACTTACCAGAACGTATTATCTTTCGTG 1339
                || || |:  |||||:| || || |||||  : || :||   || |: :: :|  : |:
Db         1278 AACCACAUUCGAACAUACCAGGCGAAAGCUCUUACAUACGCAAAUGUUUUGUCCCUUGUC 1337

Qy         1340 GAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACTGCTAGGTCTGAATGGGATGTA 1399
                || :| |:  ||:|  | |: |: |: || ||:|: || || |||:| |||:||||:|:
Db         1338 GAAUCGAUUCGAUCGAGGGUAAUCAUUAACGGUGUGACAGCGAGGUCCGAAUGGGAUGUG 1397

Qy         1400 GATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTCTTGCAGACTAAGCTGGCTGCG 1459
                || ||| |  :  : ||| ||::|:| |:||| :: : | :||| ||:||||: || |
Db         1398 GACAAAUCUUUGUUACAAUCCUUGUCCAUGACGUUUUACCUGCAUACUAAGCUUGCCGUU 1457

Qy         1460 CTTCAAGACGATATAGTAATGGGAAAGTTTCGGTGCTTGGATAAGACCACTTCTGAACTT 1519
                |:  | || ||  :| : |:  | |||::: |   |      || ||    :   | | :
Db         1458 CUAAAGGAUGACUUACUGAUUAGCAAGUUUAGUCUCGGUUCGAAAACGGUGUGCCAGCAU 1517

Qy         1520 ATTTGGGATGAGGTGGGCAAATTTTTTGGAAACGTTTTCCCCACTATCAAAGAGAGATTG 1579
                 : :||||:|||| :          :::|| ||||  :: ||| |  : ||||||||| :
Db         1518 GUGUGGGAUGAGAUUUCGCUGGCGUUUGGGAACGCAUUUCCCUCCGUGAAAGAGAGACUC 1577

Qy         1580 GTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTGAAGATCAAGATCCCAGATCTG 1639
```

```
                 :|| ||||||| :: :     |:    |   | ||  :  |||:|| | : || ||:|:
Db        1578 UUGAACAGGAAACUUAUCAGAGUGGCAGGCGACGCAUUAGAGAUCAGGGUGCCUGAUCUA 1637

Qy        1640 TATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACCAAGTCTGAGGAGTTACCGCAT 1699
               :|:|: || :   | ||||| :: |:  |:|| :|||     :|:| |||  : ||
Db        1638 UAUGUGACCUUCCACGACAGAUUAGUGACUGAGUACAAGGCCUCUGUGGACAUGCCUGCG 1697

Qy        1700 CTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATGTACGACGCGTTATCAGAATTA 1759
               |: || |: | |||| |  : |||||| | ||     |:|:|| | ||  : :|||| ::|
Db        1698 CUUGACAUUAGGAAGAAGAUGGAAGAAACGGAAGUGAUGUACAAUGCACUUUCAGAGUUA 1757

Qy        1760 TCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAGTTCAAAGACATGTGCAAGGCT 1819
               :|  :  : | ||   |:|| || ::|||: : |      ::      | |:|:|| |  |:
Db        1758 UCGGUGUUAAGGGAGUCUGACAAAUUCGAUGUUGAUGUUUUUCCCAGAUGUGCCAAUCU 1817

Qy        1820 TTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTTGCAGTGGCCGAGAATAGAAGC 1879
               :: || |::    ||       ||||||    |: |: |: || |:        ||:   |||
Db        1818 UUGGAAGUUGACCCAAUGACGGCAGCGAAGGUUAUAGUCGCGGUCAUGAGCAAUGAGAGC 1877

Qy        1880 GGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAATGTGGCTAAGGCTCT------T 1933
               ||: : ||:|: || :::||    || || |||| |||:|: ||   ||: :       :
Db        1878 GGUCUGACUCUCACAUUUGAACGACCUACUGAGGCGAAUGUUGCGCUAGCUUUACAGGAU 1937

Qy        1934 AAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCGACATCCGAAGAGGTGAACGTA 1993
                 ||   | ||| :| || |  |   :     ::     | | |   | || |
Db        1938 CAAGAGAAGGCUUCAGAAGGUGCAUUGGUAGUUACCUCAAGAGAAGUUGAAGAACCGUCC 1997

Qy        1994 AATAAATTTTCTATTGCTGAGAAAGGGAGATTGCCTGTGTGTGCAGAAAGTCATGGTTTG 2053
               |  ||    ::| |: ||      || |  |      |  |:   |   | |:  :  |
Db        1998 AUGAAGGGUUCGAUGGCCAGAGGAGAGUUACAAUUAGCUGGUCUUGCUGGAGAUCAUCCG 2057

Qy        2054 ACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTCAACGATTTCCATAAGGCTTGC 2113
                  |    |  | :   || || ||||| : |||:|  :  |  |  :: ||:| |||
Db        2058 GAGUCGUCCUAUUCUAAGAACGAGGAGAUAGAGUCUUUAGAGCAGUUUCAUAUGGCGACG 2117

Qy        2114 GTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTCTACACTGGCTCACTCAAAGTT 2173
               |  ||:    : |::    ||||| |:|    :|| ::|: :|||| ||  |  : ||||::
Db        2118 GCAGAUUCGUUAAUUCGUAAGCAGAUGAGCUCGAUUGUGUACACGGGUCCGAUUAAAGUU 2177

Qy        2174 CAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCGTTGTCCGCCACTGTATCAAAT 2233
               || ||||:||| |||: : : || ||   :|| ||| :|  : :| ||  | |: :| ||:
Db        2178 CAGCAAAUGAAAAACUUUAUCGAUAGCCUGGUAGCAUCACUAUCUGCUGCGGUGUCGAAU 2237

Qy        2234 CTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCTGATTCCAGGGAGAAAGTTGGT 2293
               |:    ||||   |: || ||:  ||  |     :||   :||  || |  | ||  ::||
Db        2238 CUCGUCAAGAUCCUCAAAGAUACAGCUGCUAUUGACCUUGAAACCCGUCAAAAGUUUGGA 2297

Qy        2294 GTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCTGCGGCCAAAGGTCATTCATGG 2353
               |: :  |||:|:   | :   |   |||:|| :  :||||||  ||||||| |:||: ||:||
Db        2298 GUCUUGGAUGUUGCAUCUAGGAAGUGGUUAAUCAAACCAACGGCCAAGAGUCAUGCAUGG 2357

Qy        2354 GGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCACTTCTATCTTATGAAGGAGAT 2413
               || |::|:        .||  | ||||       :     ||  |:: :     :|:||  |   |
Db        2358 GGUGUUGUUGAAACCCACGCGAGGAAGUAUCAUGUGGCGCUUUUGGAAUAUGAUGAGCAG 2417

Qy        2414 AGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTATCATCTGATACAATGGTATAT 2473
                 |  :||:|||         || :|||| || |: ||:|:     :|:||  |  : |: :|:
Db        2418 GGUGUGGUGACAUGCGAUGAUUGGAGAAGAGUAGCUGUUAGCUCUGAGUCUGUUGUUUAU 2477

Qy        2474 TCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATGAGAGACGGTGAACCCCACGAA 2533
                :| || |: || || |:|  || :|:| | | |     :   || |||| ||||| || |
Db        2478 UCCGACAUGGCGAAACUCAGAACUCUGCGCAGACUGCUUCGAAACGGAGAACCGCAUGUC 2537

Qy        2534 CCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGTTGTGGAAAGTACAAAGGAGAT 2593
                 :|  |||||| : |: |::|:||| || |: || || :|:|||||    ||||| |  :
Db        2538 AGUAGCGCAAAGGUUGUUCUUGUGGACGGAGUUCCGGGCUGUGGAAAAACCAAAGAAAUU 2597

Qy        2594 TTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTTCCTGGAAAACAAGCTGCTGCT 2653
                ::    ||  :: |: ::||:|| ||: : |: :: |: ||:|| || ||||| ||  |
Db        2598 CUUUCCAGGGUUAAUUUUGAUGAAGAUCUAAUUUUAGUACCUGGGAAGCAAGCCGCGGAA 2657

Qy        2654 ATGATCAGAAGAAGGCTAATTCATCTGGACTGATAAGAGCCACAATGGACAATGTGAGA 2713
               |:||:||||||| | || ||::| :| ||  : |:     ||||| | |||||| |: | |
Db        2658 AUGAUCAGAAGACGUGCGAAUUCCUCAGGGAUUAUUGUGGCCACGAAGGACAACGUUAAA 2717

Qy        2714 ACGGTAGATTCACTTCTAATGCATCCAAAACCGCGATCACA---------CAAGAGGCTT 2764
               || |: ||::|  :  : |:| |:           |  |||         ||||||| :
Db        2718 ACCGUUGAUUCUUUCAUGAUGAAUUUUGGGAAAAGCACACGCUGUCAGUUCAAGAGGUUA 2777

Qy        2765 TTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTTAACTTCCTGGTGCTTATCTCT 2824
               :: |::||:||||||::||:| :|||  ||  ||::|:|::|| ::  |: |:|   |: :|
Db        2778 UUCAUUGAUGAAGGGUUGAUGUUGCAUACUGGUUGUGUUAAUUUUCUUGUGGCGAUGUCA 2837

Qy        2825 GGTTGCGACATCGCATACATTTACGGAGATACACAGCAGATTCCTTTCATTAACAGAGTT 2884
                  :|||| |: |||:|  :::||||||| |||||||||||::|| : ||: || ||||::
Db        2838 UUGUGCGAAAUUGCAUAUGUUUACGGAGACACACAGCAGAUUCCAUACAUCAAUAGAGUU 2897

Qy        2885 CAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAAGTGGATGAAGTTGAGATGAGG 2944
                     ::||||:| |||   ||::::|  ||  :| |||: || || |: ||||  . |
Db        2898 UCAGGAUUCCCGUACCCCGCCCAUUUUGCCAAAUUGGAAGUUGACGAGGUGGAGACACGC 2957

Qy        2945 AGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTCCTACAATCGAAGTACGAAGGA 3004
               || || || |:  | :| ||||  ||:|:|     ::  |:  |    ||  :| || ||
Db        2958 AGAACUACUCUCCGUUGUCCAGCCGAUGUCACACAUUAUCUGAACAGGAGAUAUGAGGGC 3017

Qy        3005 GCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCATCTGAGATGATAGGCGGTAAG 3064
                  |: |  | |||::|   | |:  ||    :| |: :|      ||||:| : |||||
Db        3018 UUUGUCAUGAGCACUUCUUCGGUUAAAAAGUCUGUUUCGCAGGAGAUGGUCGGCGGAGCC 3077

Qy        3065 GGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGAAAATTGTAACTTTCACTCAGGCT 3124
               |  |:  : ||       : :| ||||| :   | || || |:  : ||::: || ||  |
Db        3078 GCCGUGAUCAAUCCGAUCUCAAAACCCUUGCAUGGCAAGAUCCUGACUUUUACCCAAUCG 3137

Qy        3125 GATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTGAACACCGTTCATGAGATCCAA 3184
               ||:|||   |   :        | || :|:     |:|: |||| |: ||:||  : |||
Db        3138 GAUAAAGAAGCUCUGCUUUCAAGAGGGUAUUCAGAUGUUCACACUGUGCAUGAAGUGCAA 3197

Qy        3185 GGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACGGCAACTCCACTGACTCTGATT 3244
               || || || :      ||:|: :| |: |: || :: ||  | || ||| :  |  : |::
Db        3198 GGCGAGACAUACUCUGAUGUUUCACUAGUUAGGUUAACCCCUACACCAGUCUCCAUCAUU 3257

Qy        3245 TCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGACACACAAAGAGCTTCAAATAT 3304
                |         ||| ||:|:: : |:|||  :| | || |||||         :||| :|
Db        3258 GCAGGAGACAGCCCACAUGUUUUGGUCGCAUUGUCAAGGCACACCUGUUCGCUCAAGUAC 3317

Qy        3305 TACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGTGATTTGTCTTCTTTAAGCTCC 3364
               :|||| |: |:  : ||:||:::||:     |: |::|| ||: :          : |||:|
Db        3318 UACACUGUUGUUAUGGAUCCUUUAGUUAGUAUCAUUAGAGAUCUAGAGAAACUUAGCUCG 3377

Qy        3365 TTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGATAGCAATTACAGATGGATGCA 3424
               : | : ::||| |:|:|:| ||: || ||||| |     |:||||||::|||||: ||   |
Db        3378 UACUUGUUAGAUAUGUAUAAGGUCGAUGCAGGAACACAAUAGCAAUUACAGAUUGACUCG 3437

Qy        3425 GTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAATCAGGAGACTTTCCAGATCTA 3484
               |:|::|||||||:    ||:|: :::|: ||| | || ||  | || ||  :: | ||: :
Db        3438 GUGUUCAAAGGUUCCAAUCUUUUUGUUGCAGCGCCAAAGACUGGUGAUAUUUCUGAUAUG 3497

Qy        3485 CAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACTATACTTAACAAGTATGATGCT 3544
               |||:: :| :| ||:    :| |:||| || || || || |:   : || || : :||:||:
Db        3498 CAGUUUUACUAUGAUAAGUGUCUCCCAGGCAACAGCACCAUGAUGAAUAAUUUUGAUGCU 3557

Qy        3545 GTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAGGATTGTGTTCTTGATTTTTCC 3604
               |::||||:||||::    :|| | :     : ||:|: || ||::|   :   : ||: : :|
Db        3558 GUUACCAUGAGGUUGACUGACAUUUCAUUGAAUGUCAAAGAUUGCAUAUUGGAUAUGUCU 3617

Qy        3605 AAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTAGAGCCAGTTTTGCGTACCGCG 3664
               ||   : ::|     ||| |||||     |     |    |:|    ||  :  : || || |||
Db        3618 AAGUCUGUUCGUGCGCCUAAGGAUCAAAUCAAACCACUAAUACCUAUGGUACGAACGGCG 3677

Qy        3665 GCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTGGTTGCAATGATTAAAAGAAAT 3724
               || |||  |||| |       | ||||:| : |||||: : |: || |:||::||||||||
Db        3678 GCAGAAAUGCCACGCCAGACUGGACUAUUGGAAAAUUUAGUGGCGAUGAUUAAAAGAAAC 3737

Qy        3725 TTCAACGCACCAGACCTGACGGGGACGATTGACATTGAGAGCACCGCATCTGTTGTAGTA 3784
               :: |||||||| ||   :| | || |  |::|| |::|| |  || |||:|: : |: |:|
Db        3738 UUUAACGCACCCGAGUUGUCUGGCAUCAUUGAUAUUGAAAAUACUGCAUCUUUGGUUGUA 3797
```

```
Qy        3785 GATAAGTTTTTTGATAGCTATTTTATTAAAAAAGAAAAATACACAAAAAATATTGCTGGA 3844
               ||:|||::::::||:|| :|:::  ::||| || ||| | |  |||| || | :| :
Db        3798 GAUAAGUUUUUUGAUAGUUAUUUGCUUAAAGAAAAAAGAAAACCAAAUAAAAAUGUUUCU 3857

Qy        3845 GTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAACAGGAAAGAAGTACTATTGGAC 3904
                :| : |  |  || :|  : |  |||:||:: |||||   | || | |:||  | : | |
Db        3858 UUGUUCAGUAGAGAGUCUCUCAAUAGAUGGUUAGAAAAGCAGGAACAGGUAACAAUAGGC 3917

Qy        3905 GACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATCGATCAGTACAAGCACATGATC 3964
                |  : ||  | :   |::::   ||: :||| ||  : ||:|||:||| ||||:||:
Db        3918 CAGCUCGCAGAUUUUGAUUUUGUGGAUUUGCCAGCAGUUGAUCAGUACAGACACAUGAUU 3977

Qy        3965 AAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAGAATGAATACCCTGCTCTGCAA 4024
               || || |||||| ||||| || ::||||  ::|||: || |  || :|||| ||: :|||
Db        3978 AAAGCACAACCCAAACAAAAGUUGGACACUUCAAUCCAAACGGAGUACCCGGCUUUGCAG 4037

Qy        4025 ACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTGGCCGGTTTCT---CAGAGCTT 4081
               || |::|: :||||::| ||  |||:||| |  |: :: | |   :: :     ||||::
Db        4038 ACGAUUGUGUACCAUUCAAAAAAGAUCAAUGCAAUAUUCGGCCCGUUGUUUAGUGAGCUU 4097

Qy        4082 ACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTTCTTTTCTTTACTAGGAAAACT 4141
               || |||    : |: ||     ::||::| |  |  ::: : :: :: || || || ||
Db        4098 ACUAGGCAAUUACUGGACAGUGUUGAUUCGAGCAGAUUUUUGUUUUUCACAAGAAAGACA 4157

Qy        4142 CCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCGCACGTTCCTATGGATGTGTTA 4201
               ||||  ||||:: | || :: ::|   ||:|:||||   || |: || |:|||:|: ::
Db        4158 CCAGCGCAGAUUGAGGAUUUCUUCGGAGAUCUCGACAGUCAUGUGCCGAUGGAUGUCUUG 4217

Qy        4202 GAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAGTTTCATTGTGCTGTAGAGTAT 4261
               || |:|||:|: :| || :| || || :| ||||| || :: || :|:||  :||| :|
Db        4218 GAGCUGGAUAUAUCAAAAUACGACAAAUCUCAGAAUGAAUUCCACUGUGCAGUAGAAUAC 4277

Qy        4262 GAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCCGAAGTGTGGAAACAAGGGCAC 4321
               || |: :||  ||||::|||: :  | || :: ::||  ||||: :|||||||||||||
Db        4278 GAGAUCUGGCGAAGAUUGGGUUUUGAAGACUUCUUGGGAGAAGUUUGGAAACAAGGGCAU 4337

Qy        4322 AGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAGACATGTCTGTGGTATCAAAGG 4381
               || || || ||  : |||||::| |  || || |  || || :|  : :||:|:|||||
Db        4338 AGAAAGACCACCCUCAAGGAUUAUACCGCAGGUAUAAAAACUUGCAUCUGGUAUCAAAGA 4397

Qy        4382 AAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTTATAATAGCAGCTTGCTTGGGT 4441
               || ||||| || |: || || ::||: || || ||:|: |: |: || || :| ::||
Db        4398 AAGAGCGGGGACGUCACGACGUUCAUUGGAAACACUGUGAUCAUUGCUGCAUGUUUGGCC 4457

Qy        4442 TCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTTTGTGGAGACGATTCCGTTTTG 4501
               :| |:| : ||||:||| ||  : |: |||||| || ::::| || |||||:    :  :|
Db        4458 UCGAUGCUUCCGAUGGAGAAAAUAAUCAAAGGAGCCUUUUGCGGUGACGAUAGUCUGCUG 4517

Qy        4502 TATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCATGTGCTAATCTCATGTGGAAT 4561
               :| :::||||||||::  || :: || ||  : ||    :  || ||:|: |:|:||||:
Db        4518 UACUUUCCAAAGGGUUGUGAGUUUCCGGAUGUGCAACACUCCGCGAAUCUUAUGUGGAAU 4577

Qy        4562 TTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTTTGTGGTAGATACATCATACAC 4621
               :::|| || ||||:|: :| |||   |:| || :||::::| || |||:|  : |:|||
Db        4578 UUUGAAGCAAAACUGUUUAAAAAACAGUAUGGAUACUUUUGCGGAAGAUAUGUAAUACAU 4637

Qy        4622 CATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAGTTGATCTCCAAACTTGGGGCA 4681
               || || |  |||   |: |:|:|::| ||:||  : |||::||:|:| ||||::|| ||
Db        4638 CACGACAGAGGAUGCAUUGUGUAUUACGAUCCCCUAAAGUUGAUCUCGAAACUUGGUGCU 4697

Qy        4682 AAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGGGTGTCTTTGTGCGATGTTGCT 4741
               ||||| |:||||||::  || |||:: || |||:: ||   |:|: : :| ||:|::||:
Db        4698 AAACACAUCAAGGAUUGGGAACACUUGGAGGAGUUCAGAAGGUCUCUUUGUGAUGUUGCU 4757

Qy        4742 TGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTGAACGCAGCTATCAAGGAGGTT 4801
                 ::|| :    || :|    :     :    | ||| :| |||  ||: :   |||||::
Db        4758 GUUUCGUUGAACAAUUGUGCGUA---UUACACACAGUUGGACGACGCUGUAUGGGAGGUU 4814

Qy        4802 CATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGTGTTAACAAATTTTTGTGTGAT 4861
               ||:|| |||||   :   ||::||:::| :: :||  |: :    ||| ::::|: :||:
Db        4815 CAUAAGACCGCCCCUCCAGGUUCGUUUGUUUAUAAAAGUCUGGUGAAGUAUUUGUCUGAU 4874
```

```
Qy        4862 AAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAGTCTCAGAGATACTGTCAAAAT 4921
               ||| :: : :::|||| ::::|::: :| |:|||: :   : : | ||  |  |: || |:
Db        4875 AAAGUUCUUUUUAGAAGUUUGUUUAUAGAUGGCUCUAGUUGUUAAAGGAAAAGUGAAUAU 4934

Qy        4922 TAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACTTCCGGCATTCATGACTAAGGT 4981
                |  |||:: |: || |: :| |||  |||  |||:  : ||| |  :  : ||    |:
Db        4935 CAAUGAGUUUAUCGACCUGUCAAAAAUGGAGAAGAUCUUACCGUCGAUGUUUACCCCUGU 4994

Qy        4982 CAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGCTGTTAAGAATGATAGTCTTTC 5041
                |||||:|::|     :| |  |: || ||  |: |:|| :  : ||||:||     : :|
Db        4995 AAAGAGUGUUAUGUGUUCCAAAGUUGAUAAAAUAAUGGUUCAUGAGAAUGAGUCAUUGUC 5054

Qy        5042 TGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAAAGGGTATGTGTGCTTAGCTGA 5101
                || |:  |  : |::|||||| |::||| :  :: | |  || :| |: :| ::||| |
Db        5055 AGAGGUGAACCUUCUUAAAGGAGUUAAGCUUAUUGAUAGUGGAUACGUCUGUUUAGCCGG 5114

Qy        5102 TTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTGCCGTGGTGGTGTCAGTGTTTG 5161
               :::||: |:  | || |||:||||  : || || || :|| | || ||:|: || |: :|
Db        5115 UUUGGUCGUCACGGGCGAGUGGAACUUGCCUGACAAUUGCAGAGGAGGUGUGAGCGUGUG 5174

Qy        5162 TATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAACGCTGGGTGCGTATCACGCCCC 5221
               : : |: || || || |:| ||||     | || || || |: ||  | :|  || |  |
Db        5175 UCUGGUGGACAAAAGGAUGGAAAGAGCCGACGAGGCCACUCUCGGAUCUUACUACACAGC 5234

Qy        5222 TGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAATTATTCAATAACATCCGAGGA 5281
                ||:   || || |  :::   :: ||| :  : || ||::|: | |:|||  || ||||
Db        5235 AGCUGCAAAGAAAAGAUUUCAGUUCAAGGUCGUUCCCAAUUAUGCUAUAACCACCCAGGA 5294

Qy        5282 TGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAAAGGAGTGGCTATGGAAGAAGG 5341
                ||   |||  ||   :||||||: ::||:|: | |   |:|   |:|  ||  ||
Db        5295 CGCGAUGAAAAACGUCUGGCAAGUUUUAGUUAAUAUUAGAAAUGUGAAGAUGUCAGCGGG 5354

Qy        5342 ATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGTAGTACATAAAAATAATGTAAG 5401
                : |:|:||  : :|: :||||:: |: :|  : :|: : |:  |:| |||:||: :||
Db        5355 UUUCUGUCCGCUUUCUCUGGAGUUUGUGUCGGUGUGUAUUGUUUAUAGAAAUAAUAUAAA 5414

Qy        5402 AAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGGCTCGCCAATTGAACTCACTGA 5461
               |  |||:::||| ||    |::   |  |:|| ||||||   ||| |: ||||: || ||
Db        5415 AUUAGGUUUGAGAGAGAAGAUUACAAACGUGAGAGACGGAGGGCCCAUGGAACUUACAGA 5474

Qy        5462 AAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGCTGTGAAACTCGAAAAGGTTCC 5521
               | | |: |::|| |||::| :||| || |: || |:| |  : |  |: | |||| ::|
Db        5475 AGAAGUCGUUGAUGAGUUCAUGGAAGAUGUCCCUAUGUCGAUCAGGCUUGCAAAGUUUCG 5534

Qy        5522 GG------------AAAACAAAAAAGAAATGGTAGGTAATAATGTTAATAAT-------- 5561
                             |||| |   | |       ||| || ||:  :| :||:
Db        5535 AUCUCGAACCGGAAAAAAGAGUGAUGUCCGCAAAGGGAAAAAUAGUAGUAAUGAUCGGUC 5594

Qy        5562 -------AAGAAAATAAATAACAGTGGTAAGAAGGGTTTTAAAATTGAGGAAATTGAGGA 5614
                      || || |   |:|  | :| :||| |   :     ||:       |   || |
Db        5595 AGUGCCGAACAAGAACUAUAGAAAUGUUAAGGAUUUUGGAGGAAUGAGUUUUAAAAAGAA 5654

Qy        5615 TAATGTAAGTGATGACGAGT---------CTATCGCGTCATCGAGTACGTTTTAATCAAT 5665
               :||: :||  ||:|| || :         |: :|||   |:||  : ||::::|   ||:
Db        5655 UAAUUUAAUCGAUGAUGAUUCGGAGGCUACUGUCGCCGAAUCGGAUUCGUUUUA---AAU 5711

Qy        5666 ATGCCTTATACAATCAACTCTCCGAGCCAATTTGTTTACTTATCTTCCGCTTACGCAGAT 5725
               |:| |::| |  |:||   |:||    || :: |: : |:: :| :| || :  || ||
Db        5712 AUGUCUUACAGUAUCACUACUCCAUCUCAGUUCGUGUUCUUGUCAUCAGCGUGGGCCGAC 5771

Qy        5726 CCTGTGCAGCTGATCAATCTGTGTACAAATGCATTGGGTAACCAGTTTCAAACGCAACAA 5785
               ||  :  || : |: ||: : :|:|| ||:|| :: |  || |||:::||||| ||||||
Db        5772 CCAAUAGAGUUAAUUAAUUUAUGUACUAAUGCCUUAGGAAAUCAGUUUCAAACACAACAA 5831

Qy        5786 GCTAGGACAACAGTCCAACAGCAATTTGCGGATGCCTGGAAACCTGTGCCTAGTATGACA 5845
               ||: | ||    |: |||   |||::    || |  :|||||||:   ||     : ||
Db        5832 GCUCGAACUGUCGUUCAAAGACAAUUCAGUGAGGUGUGGAAACCUUCACCACAAGUAACU 5891

Qy        5846 GTGAGATTTCCTGCATCGGATTTCTATGTGTATAGATATAATTCGACGCTTGATCCGTTG 5905
               |: || :: ||:|     || ::  | |:|:| || :| ||: ||    : || ||| :
Db        5892 GUUAGGUUCCCUGACAGUGACUUUAAGGUGUACAGGUACAAUGCGGUAUUAGACCCGCUA 5951

Qy        5906 ATCACGGCGTTATTAAATAGCTTTGATACTAGAAATAGAATAATAGAGGTTGATAATCAA 5965
```

```
              :||| ||  : ::|  :   :: || ||:|||||:||||:||:||| |::|| ||:||
Db      5952 GUCACAGCACUGUUAGGUGCAUUCGACACUAGAAAUAGAAUAAUAGAAGUUGAAAAUCAG 6011

Qy      5966 CCCGCACCGAATACTACTGAAATCGTTAACGCGACTCAGAGGGTAGACGATGCTACTGTA 6025
              |    || |  ||: | ||||   :  | || ||:|  || |:|||||| || || |:
Db      6012 GCGAACCCCACGACUGCCGAAACGUUAGAUGCUACUCGUAGAGUAGACGACGCAACGGUG 6071

Qy      6026 GCTATAAGGGCTTCAATCAATAATTTGGCTAATGAACTGGTTCGTGGAACTGGCATGTTC 6085
             || |:||||    | |: ||:||:::       ||| :| :  | ||||| ||    :
Db      6072 GCCAUAAGGAGCGCGAUAAAUAAUUUAAUAGUAGAAUUGAUCAGAGGAACCGGAUCUUAU 6131

Qy      6086 AATCAAGCAGGCTTTGAGACTGCTAGTGGACTTGTCTGGACCACAACTCCGGCTACTTAG 6145
             ||:|        :: ||||   |:  :||  : |: :||||| |   :|| || || :||
Db      6132 AAUCGGAGCUCUUUCGAGAGCUCUUCUGGUUUGGUUUGGACCUCUGGUCCUGCAACCUAG 6191

Qy      6146 CTATT 6150
             | |::
Db      6192 CAAUU 6196
```

```
RESULT 10
US-09-962-527-2
; Sequence 2, Application US/09962527
; Patent No. 6740740
;  GENERAL INFORMATION:
;       APPLICANT: GARGER, STEPHEN
;                  HOLTZ, R. BARRY
;                  McCULLOCH, MICHAEL
;                  TURPEN, THOMAS
;       TITLE OF INVENTION: A PROCESS FOR ISOLATING AND
;                           PURIFYING VIRUSES SOLUBLE PROTEINS AND PEPTIDES
;                           FROM PLANT SOURCES
;       NUMBER OF SEQUENCES: 5
;       CORRESPONDENCE ADDRESS:
;            ADDRESSEE: Howrey & Simon
;            STREET: 1299 Pennsylvania Avenue N.W.
;            CITY: Washington
;            STATE: DC
;            COUNTRY: USA
;            ZIP: 20004
;       COMPUTER READABLE FORM:
;            MEDIUM TYPE: Diskette
;            COMPUTER: IBM Compatible
;            OPERATING SYSTEM: DOS
;            SOFTWARE: FastSEQ for Windows Version 2.0
;       CURRENT APPLICATION DATA:
;            APPLICATION NUMBER: US/09/962,527
;            FILING DATE: 24-Sep-2001
;            CLASSIFICATION: <Unknown>
;       PRIOR APPLICATION DATA:
;            APPLICATION NUMBER: 09/037,751
;            FILING DATE: 10-march-1998
;       ATTORNEY/AGENT INFORMATION:
;            NAME: Halluin, Albert P
;            REGISTRATION NUMBER: 25,277
;            REFERENCE/DOCKET NUMBER: 00801.0140.999
;       TELECOMMUNICATION INFORMATION:
;            TELEPHONE: 650-463-8109
;            TELEFAX: 650-463-8400
;            TELEX: <Unknown>
;  INFORMATION FOR SEQ ID NO: 2:
;       SEQUENCE CHARACTERISTICS:
;            LENGTH: 6439 base pairs
;            TYPE: nucleic acid
;            STRANDEDNESS: single
;            TOPOLOGY: unknown
;       MOLECULE TYPE: Genomic RNA
;       SEQUENCE DESCRIPTION: SEQ ID NO: 2:
US-09-962-527-2

  Query Match            38.6%;  Score 2455.4;  DB 4;  Length 6439;
  Best Local Similarity  44.8%;  Pred. No. 0;
  Matches 2772;  Conservative 1147;  Mismatches 2206;  Indels   60;  Gaps    8;
```

```
Qy        20 ACAACAACAATTAAAACAAAAACAACATATTACAAACAACAAACAACAACAATGGCACAC 79
             || |  |  |  |||  | ||||||||:   |   || |   ||||  ||||:|||| ||
Db        18 ACCAACAACAACAAACAACAAACAACAUUACAAUUACUAUUUACAAUUACAAUGGCAUAC 77

Qy        80 ATACAATCTATAATTAGCAACGCCCTTCTTGAAAGCGTGAGTGGTAAAAACACTCTCGTT 139
             | |||  |    |  |     ||  : |: || |  |:  | || || ||| |  : |:
Db        78 ACACAGACAGCUACCACAUCAGCUUUGCUGGACACUGUCCGAGGAAACAACUCCUUGGUC 137

Qy       140 AATGACCTTGCAAGAAGGCGCATGTACGATACGGCCGTGGAAGAATTTAACGCCCGCGAC 199
             ||:|| |: ||||   | ||  : :|||| || || |: ||||| :::||||| || |||
Db       138 AAUGAUCUAGCAAAGCGUCGUCUUUACGACACAGCGGUUGAAGAGUUUAACGCUCGUGAC 197

Qy       200 CGTAGACCAAAGGTCAACTTTTCCAAAACTATTAGCGAAGAGCAAACGCTTCTAGTCTCC 259
             || || || ||||: |||::::| |||   |: ||||| ||||| ||||:: : |   ||
Db       198 CGCAGGCCCAAGGUGAACUUUUCAAAAGUAAUAAGCGAGGAGCAGACGCUUAUUGCUACC 257

Qy       260 AACGCGTACCCGGAGTTCCAGATTACCTTTTATAATACTCAAAATGCCGTACACAGTTTG 319
                |||:| || || ::||| |::|| ::::|:|| || |||||:||||: ||     :
Db       258 CGGGCGUAUCCAGAAUUCCAAAUUACAUUUUAUAACACGCAAAAUGCCGUGCAUUCGCUU 317

Qy       320 GCTGGAGGTTTGAGAGCATTAGAATTGGAATATCTGATGCTACAAGTTCCCTATGGATCG 379
             || || || ::| || | ::|||| :||||:|:|:||:| : ||| ::|||:| |||:|
Db       318 GCAGGUGGAUUGCGAUCUUUAGAACUGGAAUAUCUGAUGAUGCAAAUUCCCUACGGAUCA 377

Qy       380 CCGACATATGATATAGGTGGGAACTTTGCAGCACATTTGTTCAAAGGCAGGGATTACGTG 439
               ||| :|:|| |:||| ||||| :::||| | ||: :|::||| ||  | |  :| |:
Db       378 UUGACUUAUGACAUAGGCGGGAAUUUUGCAUCGCAUCUGUUCAAGGGACGAGCAUAUGUA 437

Qy       440 CATTGCTGTATGCCCAATCTGGACATACGAGATATAATGAGGCACGAAGGACAAAAGGAC 499
             || :||:| |:|||||| |:|||| : ||||| |: |:| |||||||||| || || |||
Db       438 CACUGCUGCAUGCCCAACCUGGACGUUCGAGACAUCAUGCGGCACGAAGGCCAGAAAGAC 497

Qy       500 TCAATTGAGATGTATTTGTCCAGATTGTCTCGTTCTAACAAGGTAATTCCTGAGTTTCAA 559
                |::||  : :|  : :| ||  :     |       ||   | : ||  | :: |||
Db       498 AGUAUUGAACUAUACCUUUCUAGGCUAGAGAGAGGGGGGAAAACAGUCCCCAACUUCCAA 557

Qy       560 AGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAAGTCTGCTGCTCTAAAACTTTT 619
             | ||| || ::: |||| :| ||||||  :||  | || |    |:|    || ||:::
Db       558 AAGGAAGCAUUUGACAGAUACGCAGAAAUUCCUGAAGACGCUGUCUGUCACAAUACUUUC 617

Qy       620 CAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGAAGATACGCTGTTGCTCTGCAC 679
             |||      |||   || |||    || |    || |||   :| ||  ::|| |: |||
Db       618 CAGACAAUGCGACAUCAGCCGAUGCAGCAAUCAGGCAGAGUGUAUGCCAUUGCGCUACAC 677

Qy       680 AGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCGTTAATATCTAAGAATATACAT 739
             ||  : :|:|| |: || |   |:|||:: || || ||  :  :    || ||: : ||:
Db       678 AGCAUAUAUGACAUACCAGCCGAUGAGUUCGGGGCGGCACUCUUGAGGAAAAAUGUCCAU 737

Qy       740 GTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTACTAGACCAGACGGAGGTTACG 799
                :| :|:|| ||:: |   ::  | ||     :  : |: ||  |  |  | |: |
Db       738 ACGUGCUAUGCCGCUUUCCACUUCUCCGAGAACCUGCUUCUUGAAGAUUCAUACGUCAAU 797

Qy       800 CTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGATGATGTTTCTTTTTTCTTTGCT 859
              :  | ||||:   |||   :::     | || || ||  |  :  | ::::  :::||
Db       798 UUGGACGAAAUCAACGCGUGUUUUUCGCGCGAUGGAGACAAGUUGACCUUUUCUUUUGCA 857

Qy       860 GATGAAAGTACTTTAAATTATAGTCATAAATACAAAAATATCTTGCATTATGTAGTTAAA 919
                || ||:||: : ||::|: |:||:|  :|    ||:|:  :  | :|:|:    |||
Db       858 UCAGAGAGUACUCUUAAUUAUUGUCAUAGUUAUUCUAAUAUUCUUAAGUAUGUGUGCAAA 917

Qy       920 TCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAGGAATTTTTAGTCACTAGGGTT 979
              |::||:: || || :|:| :|||   |:::|| : ||||| :::::||:||| || |::
Db       918 ACUUACUUCCCGGCCUCUAAUAGAGAGGUUUACAUGAAGGAGUUUUUAGUCACCAGAGUU 977

Qy       980 AATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTATATTCTGTACAAGAGTGTTAGA 1039
             ||:|| :||::::|:|| ::: | | | :|||:|| : : :: :|:||||  |:|:
Db       978 AAUACCUGGUUUUGUAAGUUUUCUAGAAUAGAUACUUUUCUUUUGUACAAAGGUGUGGCC 1037

Qy      1040 CAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATGGAAGACGCCTTTGCTTACAAG 1099
             ||   | |    ||:||:|| |||:: :|:   || |:||||||||| :    ::||||
Db      1038 CAUAAAAGUGUAGAUAGUGAGCAGUUUUAUACUGCAAUGGAAGACGCAUGGCAUUACAAA 1097
```

```
Qy        1100 AAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTTAGAGACACGGCTTCGGTTAAC 1159
               || ||  : || |:|: |||||  || |||    :| ::   ||  |  | :| |: ||
Db        1098 AAGACUCUUGCAAUGUGCAACAGCGAGAGAAUCCUCCUUGAGGAUUCAUCAUCAGUCAAU 1157

Qy        1160 TTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCGCTGTTTGAGGGTTCTATTACC 1219
               :  :||:: || || |:|| ||| |:||: |: |:|||  : :: ||   ::|: :
Db        1158 UACUGGUUUCCCAAAAUGAGGGAUAUGGUCAUCGUACCAUUAUUCGACAUUUCUUUGGAG 1217

Qy        1220 AGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGTGACTTCGTTTACACAGTGCTT 1279
               |  |  |||| |||  | |  || |:| : |:       || ::||: :  ||||:||::
Db        1218 ACUAGUAAGAGGACGCGCAAGGAAGUCUUAGUGUCCAAGGAUUUCGUGUUUACAGUGCUU 1277

Qy        1280 AATCATATCAGAACATATCAAGCCAAAGCGTTAACTTACCAGAACGTATTATCTTTCGTG 1339
               || || |:  |||||:| || || |||||  : || :||   || |: :: :|  : |:
Db        1278 AACCACAUUCGAACAUACCAGGCGAAAGCUCUUACAUACGCAAAUGUUUUGUCCCUUGUC 1337

Qy        1340 GAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACTGCTAGGTCTGAATGGGATGTA 1399
               || :| |:  ||:|  | |: |: |: || ||:|: || || |||:| |||:|||:|:
Db        1338 GAAUCGAUUCGAUCGAGGGUAAUCAUUAACGGUGUGACAGCGAGGUCCGAAUGGGAUGUG 1397

Qy        1400 GATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTCTTGCAGACTAAGCTGGCTGCG 1459
               || |||  | :  : ||| ||::|:| |:||| :: : | :||| ||:||||: || |
Db        1398 GACAAAUCUUUGUUACAAUCCUUGUCCAUGACGUUUUACCUGCAUACUAAGCUUGCCGUU 1457

Qy        1460 CTTCAAGACGATATAGTAATGGGAAAGTTTCGGTGCTTGGATAAGACCACTTCTGAACTT 1519
               |:  | || ||  :| : |:  | |||::: |   |      || ||    :   | | :
Db        1458 CUAAAGGAUGACUUACUGAUUAGCAAGUUUAGUCUCGGUUCGAAAACGGUGUGCCAGCAU 1517

Qy        1520 ATTTGGGATGAGGTGGGCAAATTTTTTGGAAACGTTTTCCCCACTATCAAAGAGAGATTG 1579
                : :||||:|||  :          :::|| ||||  :: ||| |  : ||||||||| :
Db        1518 GUGUGGGAUGAGAUUUCGCUGGCGUUUGGGAACGCAUUUCCCUCCGUGAAAGAGAGACUC 1577

Qy        1580 GTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTGAAGATCAAGATCCCAGATCTG 1639
                :|| ||||||| :: :    |:    |   | ||  :  |||:|| | : || ||:|:
Db        1578 UUGAACAGGAAACUUAUCAGAGUGGCAGGCGACGCAUUAGAGAUCAGGGUGCCUGAUCUA 1637

Qy        1640 TATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACCAAGTCTGAGGAGTTACCGCAT 1699
               :|:|: || :   | ||||| :: |:  |:|| :|||     :|:| |||  : ||
Db        1638 UAUGUGACCUUCCACGACAGAUUAGUGACUGAGUACAAGGCCUCUGUGGACAUGCCUGCG 1697

Qy        1700 CTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATGTACGACGCGTTATCAGAATTA 1759
               |: || |: | |||| |  : |||||| | ||    |:|:|| | ||  : :|||| ::|
Db        1698 CUUGACAUUAGGAAGAAGAUGGAAGAAACGGAAGUGAUGUACAAUGCACUUUCAGAGUUA 1757

Qy        1760 TCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAGTTCAAAGACATGTGCAAGGCT 1819
               :|  :  : | ||   |:|| || ::|||: : |     ::     | |:|:|| |  |:
Db        1758 UCGGUGUUAAGGGAGUCUGACAAAUUCGAUGUUGAUGUUUUUUCCCAGAUGUGCCAAUCU 1817

Qy        1820 TTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTTGCAGTGGCCGAGAATAGAAGC 1879
               :: || |::   ||      ||||||    |: |: |: || |:       ||:   |||
Db        1818 UUGGAAGUUGACCCAAUGACGGCAGCGAAGGUUAUAGUCGCGGUCAUGAGCAAUGAGAGC 1877

Qy        1880 GGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAATGTGGCTAAGGCTCT------T 1933
               ||: : ||:|: || :::||    || || |||| |||:|: ||    ||: :      :
Db        1878 GGUCUGACUCUCACAUUUGAACGACCUACUGAGGCGAAUGUUGCGCUAGCUUUACAGGAU 1937

Qy        1934 AAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCGACATCCGAAGAGGTGAACGTA 1993
                ||   | ||| :| || |  |   :     ::    | | |   |  || |
Db        1938 CAAGAGAAGGCUUCAGAAGGUGCAUUGGUAGUUACCUCAAGAGAAGUUGAAGAACCGUCC 1997

Qy        1994 AATAAATTTTCTATTGCTGAGAAAGGGAGATTGCCTGTGTGTGCAGAAAGTCATGGTTTG 2053
               |  ||   ::| |: ||      || |  |      |   |:   |   |  |:  :  |
Db        1998 AUGAAGGGUUCGAUGGCCAGAGGAGAGUUACAAUUAGCUGGUCUUGCUGGAGAUCAUCCG 2057

Qy        2054 ACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTCAACGATTTCCATAAGGCTTGC 2113
                 |    |  | :   || || ||||| : |||:|  :  |  | :: ||:| |||
Db        2058 GAGUCGUCCUAUUCUAAGAACGAGGAGAUAGAGUCUUUAGAGCAGUUUCAUAUGGCGACG 2117

Qy        2114 GTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTCTACACTGGCTCACTCAAAGTT 2173
               |  ||:    : |::   ||||| |:|   :|| ::|: :|||| ||  |  : ||||::
Db        2118 GCAGAUUCGUUAAUUCGUAAGCAGAUGAGCUCGAUUGUGUACACGGGUCCGAUUAAAGUU 2177

Qy        2174 CAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCGTTGTCCGCCACTGTATCAAAT 2233
               || ||||:||| |||: : : || ||  :|| ||| :|  : :| ||  | |: :| ||:
Db        2178 CAGCAAAUGAAAAACUUUAUCGAUAGCCUGGUAGCAUCACUAUCUGCUGCGGUGUCGAAU 2237

Qy        2234 CTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCTGATTCCAGGGAGAAAGTTGGT 2293
               |:   ||||   |: || ||:  ||  |    :||   :||  || |  | ||  ::||
Db        2238 CUCGUCAAGAUCCUCAAAGAUACAGCUGCUAUUGACCUUGAAACCCGUCAAAAGUUUGGA 2297

Qy        2294 GTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCTGCGGCCAAAGGTCATTCATGG 2353
               |: : |||:|:  | :  |  |||:|| :  :||||||  |||||||  |:||: ||:||
Db        2298 GUCUUGGAUGUUGCAUCUAGGAAGUGGUUAAUCAAACCAACGGCCAAGAGUCAUGCAUGG 2357

Qy        2354 GGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCACTTCTATCTTATGAAGGAGAT 2413
               || |::|:        ||  | ||||      :   || |:: :    :|:|| |   |
Db        2358 GGUGUUGUUGAAACCCACGCGAGGAAGUAUCAUGUGGCGCUUUUGGAAUAUGAUGAGCAG 2417

Qy        2414 AGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTATCATCTGATACAATGGTATAT 2473
                |  :||:|||       || :|||| || |: ||:|:    :|:||  |  : |: :|:
Db        2418 GGUGUGGUGACAUGCGAUGAUUGGAGAAGAGUAGCUGUUAGCUCUGAGUCUGUUGUUUAU 2477

Qy        2474 TCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATGAGAGACGGTGAACCCCACGAA 2533
               :| || |: || || |:|  || :|:| | | |    :  || |||| ||||| || |
Db        2478 UCCGACAUGGCGAAACUCAGAACUCUGCGCAGACUGCUUCGAAACGGAGAACCGCAUGUC 2537

Qy        2534 CCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGTTGTGGAAAGTACAAAGGAGAT 2593
                 :|  |||||| : |: |::|:||| || |: || || :|:|||||   ||||| |  :
Db        2538 AGUAGCGCAAAGGUUGUUCUUGUGGACGGAGUUCCGGGCUGUGGAAAAACCAAAGAAAUU 2597

Qy        2594 TTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTTCCTGGAAAACAAGCTGCTGCT 2653
                ::   ||  :: |: ::||:|| ||: : |: :: |: ||:|| || ||||| || |
Db        2598 CUUUCCAGGGUUAAUUUUGAUGAAGAUCUAAUUUUAGUACCUGGGAAGCAAGCCGCGGAA 2657

Qy        2654 ATGATCAGAAGAAGGGCTAATTCATCTGGACTGATAAGAGCCACAATGGACAATGTGAGA 2713
               |:||:||||||| | || ||::| :| ||  : |:    ||||| | |||||| |: | |
Db        2658 AUGAUCAGAAGACGUGCGAAUUCCUCAGGGAUUAUUGUGGCCACGAAGGACAACGUUAAA 2717

Qy        2714 ACGGTAGATTCACTTCTAATGCATCCAAAACCGCGATCACA---------CAAGAGGCTT 2764
               || |: ||::|  :  : |:| |:          |  |||          ||||||| :
Db        2718 ACCGUUGAUUCUUUCAUGAUGAAUUUUGGGAAAAGCACACGCUGUCAGUUCAAGAGGUUA 2777

Qy        2765 TTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTTAACTTCCTGGTGCTTATCTCT 2824
               :: |::||:||||||::||:| :||| || ||::|:|::|| :: |: |:|   |: :|
Db        2778 UUCAUUGAUGAAGGGUUGAUGUUGCAUACUGGUUGUGUUAAUUUUCUUGUGGCGAUGUCA 2837

Qy        2825 GGTTGCGACATCGCATACATTTACGGAGATACACAGCAGATTCCTTTCATTAACAGAGTT 2884
                  :|||| |: |||:|  :::||||||| ||||||||||::|| : ||: || ||||::
Db        2838 UUGUGCGAAAUUGCAUAUGUUUACGGAGACACACAGCAGAUUCCAUACAUCAAUAGAGUU 2897

Qy        2885 CAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAAGTGGATGAAGTTGAGATGAGG 2944
                     ::||||:| |||   ||::::|  ||  :| |||: || || |: ||||   |
Db        2898 UCAGGAUUCCCGUACCCCGCCCAUUUUGCCAAAUUGGAAGUUGACGAGGUGGAGACACGC 2957

Qy        2945 AGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTCCTACAATCGAAGTACGAAGGA 3004
               || || || |:  | :| ||||  ||:|: |    ::  |:  |   ||  :| || ||
Db        2958 AGAACUACUCUCCGUUGUCCAGCCGAUGUCACACAUUAUCUGAACAGGAGAUAUGAGGGC 3017

Qy        3005 GCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCATCTGAGATGATAGGCGGTAAG 3064
                  |: |  | |||::|  | |:  ||   :| |: :|    ||||:| : |||||
Db        3018 UUUGUCAUGAGCACUUCUUCGGUUAAAAAGUCUGUUUCGCAGGAGAUGGUCGGCGGAGCC 3077

Qy        3065 GGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGGAAAATTGTAACTTTCACTCAGGCT 3124
               |  |:  : ||     : :| |||||  :  | || || |:  : ||::: || ||  |
Db        3078 GCCGUGAUCAAUCCGAUCUCAAAACCCUUGCAUGGCAAGAUCCUGACUUUUACCCAAUCG 3137

Qy        3125 GATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTGAACACCGTTCATGAGATCCAA 3184
               ||:|||   |   :       |  || :|:    |:|:  |||| |: ||:||  : |||
Db        3138 GAUAAAGAAGCUCUGCUUUCAAGAGGGUAUUCAGAUGUUCACACUGUGCAUGAAGUGCAA 3197

Qy        3185 GGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACGGCAACTCCACTGACTCTGATT 3244
               || || || :     ||:|: :| |: |: || :: ||  | || ||| :  |  : |::
Db        3198 GGCGAGACAUACUCUGAUGUUUCACUAGUUAGGUUAACCCCUACACCAGUCUCCAUCAUU 3257

Qy        3245 TCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGACACACAAAGAGCTTCAAATAT 3304
                |         ||| ||:|:: : |:|||  :| | || |||||        :||| :|
```

```
Db          3258 GCAGGAGACAGCCCACAUGUUUUGGUCGCAUUGUCAAGGCACACCUGUUCGCUCAAGUAC 3317

Qy          3305 TACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGTGATTTGTCTTCTTTAAGCTCC 3364
                 :|||| |: |:  : ||:||:::||:    |: |::|| ||: :        : |||:|
Db          3318 UACACUGUUGUUAUGGAUCCUUUAGUUAGUAUCAUUAGAGAUCUAGAGAAACUUAGCUCG 3377

Qy          3365 TTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGATAGCAATTACAGATGGATGCA 3424
                 : | : ::||| |:|:|:| ||: || ||||| |    |:|||||::|||||: ||  |
Db          3378 UACUUGUUAGAUAUGUAUAAGGUCGAUGCAGGAACACAAUAGCAAUUACAGAUUGACUCG 3437

Qy          3425 GTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAATCAGGAGACTTTCCAGATCTA 3484
                 |:|::||||||:   ||:|: :::|: ||| | || ||  | || ||  :: | ||: :
Db          3438 GUGUUCAAAGGUUCCAAUCUUUUUGUUGCAGCGCCAAAGACUGGUGAUAUUUCUGAUAUG 3497

Qy          3485 CAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACTATACTTAACAAGTATGATGCT 3544
                 |||:: :| :| ||:   :| |:||| || || || || |:  : || || : :||:||:
Db          3498 CAGUUUUACUAUGAUAAGUGUCUCCCAGGCAACAGCACCAUGAUGAAUAAUUUUGAUGCU 3557

Qy          3545 GTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAGGATTGTGTTCTTGATTTTTCC 3604
                 |::||||:||||::   :|| | :    : ||:|: || ||::|  :  : ||: : :|
Db          3558 GUUACCAUGAGGUUGACUGACAUUUCAUUGAAUGUCAAAGAUUGCAUAUUGGAUAUGUCU 3617

Qy          3605 AAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTAGAGCCAGTTTTGCGTACCGCG 3664
                 ||   : ::|    ||| |||||    ||   |   |:|   ||  :  : || || |||
Db          3618 AAGUCUGUUCGUGCGCCUAAGGAUCAAAUCAAACCACUAAUACCUAUGGUACGAACGGCG 3677

Qy          3665 GCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTGGTTGCAATGATTAAAAGAAAT 3724
                 || |||  |||| |     | ||||:| : |||||: : |: || |:||::||||||||
Db          3678 GCAGAAAUGCCACGCCAGACUGGACUAUUGGAAAAUUUAGUGGCGAUGAUUAAAAGAAAC 3737

Qy          3725 TTCAACGCACCAGACCTGACGGGGACGATTGACATTGAGAGCACCGCATCTGTTGTAGTA 3784
                 :: |||||||| ||  :| | || |  |::|| |::|| |  || |||:|: : |: |:|
Db          3738 UUUAACGCACCCGAGUUGUCUGGCAUCAUUGAUAUUGAAAAUACUGCAUCUUUGGUUGUA 3797

Qy          3785 GATAAGTTTTTTGATAGCTATTTTATTAAAAAAGAAAAATACACAAAAAATATTGCTGGA 3844
                 ||:|||::::::||:|| :|:::  ::||| || ||| | |  |||| || | :| :
Db          3798 GAUAAGUUUUUUGAUAGUUAUUUGCUUAAAGAAAAAAGAAAACCAAAUAAAAAUGUUUCU 3857

Qy          3845 GTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAACAGGAAAGAAGTACTATTGGAC 3904
                  :| : |  |  || :|  : |  |||:||:: |||||   | || | |:|  | : | |
Db          3858 UUGUUCAGUAGAGAGUCUCUCAAUAGAUGGUUAGAAAAGCAGGAACAGGUAACAAUAGGC 3917

Qy          3905 GACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATCGATCAGTACAAGCACATGATC 3964
                  |  : ||  | :   |::::   ||: :||| ||  : ||:|||:|||  ||||:||:
Db          3918 CAGCUCGCAGAUUUUGAUUUUGUGGAUUUGCCAGCAGUUGAUCAGUACAGACACAUGAUU 3977

Qy          3965 AAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAGAATGAATACCCTGCTCTGCAA 4024
                 || || ||||| ||||| || ::||||  ::|||: || |  | | |||| ||: :|||
Db          3978 AAAGCACAACCCAAACAAAAGUUGGACACUUCAAUCCAAACGGAGUACCCGGCUUUGCAG 4037

Qy          4025 ACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTGGCCGGTTTCT---CAGAGCTT 4081
                 || |::|: :||||::| ||  |||:||| |  |: :: | |   :: :     ||||::
Db          4038 ACGAUUGUGUACCAUUCAAAAAAGAUCAAUGCAAUAUUCGGCCCGUUGUUUAGUGAGCUU 4097

Qy          4082 ACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTTCTTTTCTTTACTAGGAAAACT 4141
                 || |||    : |: ||     ::||::| |  |  ::: : :: :: || || || ||
Db          4098 ACUAGGCAAUUACUGGACAGUGUUGAUUCGAGCAGAUUUUUGUUUUUCACAAGAAAGACA 4157

Qy          4142 CCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCGCACGTTCCTATGGATGTGTTA 4201
                 ||||  ||||:: | || :: ::|   | :|:||||   || |: || |:|||:|: ::
Db          4158 CCAGCGCAGAUUGAGGAUUUCUUCGGAGAUCUCGACAGUCAUGUGCCGAUGGAUGUCUUG 4217

Qy          4202 GAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAGTTTCATTGTGCTGTAGAGTAT 4261
                 || |:|||:|: :| || :| || || :| ||||| || :: || :|:|| |:||| :|
Db          4218 GAGCUGGAUAUAUCAAAAUACGACAAAUCUCAGAAUGAAUUCCACUGUGCAGUAGAAUAC 4277

Qy          4262 GAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCCGAAGTGTGGAAACAAGGGCAC 4321
                 || |: :||  ||||::|||: :  | || :: ::||  ||||: :|||||||||||||
Db          4278 GAGAUCUGGCGAAGAUUGGGUUUUGAAGACUUCUUGGGAGAAGUUUGGAAACAAGGGCAU 4337

Qy          4322 AGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAGACATGTCTGTGGTATCAAAGG 4381
                 || || || ||  : |||||::| |  || || |: || || :|  : :||:|:|||||
Db          4338 AGAAAGACCACCCUCAAGGAUUAUACCGCAGGUAUAAAAACUUGCAUCUGGUAUCAAAGA 4397

Qy          4382 AAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTTATAATAGCAGCTTGCTTGGGT 4441
                 || ||||| || |: || || ::||: || || ||:|: |: |: || || :| ::||
Db          4398 AAGAGCGGGGACGUCACGACGUUCAUUGGAAACACUGUGAUCAUUGCUGCAUGUUUGGCC 4457

Qy          4442 TCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTTTGTGGAGACGATTCCGTTTTG 4501
                 :| |:| : ||||:||| ||  : |: |||||| || ::::| || |||||:    :  :|
Db          4458 UCGAUGCUUCCGAUGGAGAAAAUAAUCAAAGGAGCCUUUUGCGGUGACGAUAGUCUGCUG 4517

Qy          4502 TATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCATGTGCTAATCTCATGTGGAAT 4561
                 :| :::||||||||::  || :: || ||  : ||    :  || ||:|: |:|:||||:
Db          4518 UACUUUCCAAAGGGUUGUGAGUUUCCGGAUGUGCAACACUCCGCGAAUCUUAUGUGGAAU 4577

Qy          4562 TTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTTTGTGGTAGATACATCATACAC 4621
                 :::|| || ||||:|:  | |||   |:| || :||::::| || |||:|  : |:|||
Db          4578 UUUGAAGCAAAACUGUUUAAAAAACAGUAUGGAUACUUUUGCGGAAGAUAUGUAAUACAU 4637

Qy          4622 CATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAGTTGATCTCCAAACTTGGGGCA 4681
                 || || |  |||   |: |:|:|::| ||:||  : |||::||:|:| ||||::|| ||
Db          4638 CACGACAGAGGAUGCAUUGUGUAUUACGAUCCCCUAAAGUUGAUCUCGAAACUUGGUGCU 4697

Qy          4682 AAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGGGTGTCTTTGTGCGATGTTGCT 4741
                 ||||| |:||||||::  || |||:: || |||:: ||   |:|: : :| ||:|::||:
Db          4698 AAACACAUCAAGGAUUGGGAACACUUGGAGGAGUUCAGAAGGUCUCUUUGUGAUGUUGCU 4757

Qy          4742 TGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTGAACGCAGCTATCAAGGAGGTT 4801
                   ::|| :    || :|    :     :   | ||| :| |||  ||: :   |||||::
Db          4758 GUUUCGUUGAACAAUUGUGCGUA---UUACACACAGUUGGACGACGCUGUAUGGGAGGUU 4814

Qy          4802 CATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGTGTTAACAAATTTTTGTGTGAT 4861
                 ||:|| |||||   :   ||::||:::| :: :||  |: :    || : :::|: :||:
Db          4815 CAUAAGACCGCCCCUCCAGGUUCGUUUGUUUAUAAAAGUCUGGUGAAGUAUUUGUCUGAU 4874

Qy          4862 AAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAGTCTCAGAGATACTGTCAAAAT 4921
                 ||| :: : :::|||| :::|::: :| |:|||: :   : : | ||  |  |: || |:
Db          4875 AAAGUUCUUUUUAGAAGUUUGUUUAUAGAUGGCUCUAGUUGUUAAAGGAAAAGUGAAUAU 4934

Qy          4922 TAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACTTCCGGCATTCATGACTAAGGT 4981
                  |  |||:: |: || |: :| |||  |||  |||:  : ||| |  :  : ||    |:
Db          4935 CAAUGAGUUUAUCGACCUGUCAAAAAUGGAGAAGAUCUUACCGUCGAUGUUUACCCCUGU 4994

Qy          4982 CAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGCTGTTAAGAATGATAGTCTTTC 5041
                  |||||:|::|     :| |  |: || || |: |:|| :  : ||||:||     : :|
Db          4995 AAAGAGUGUUAUGUGUUCCAAAGUUGAUAAAAUAAUGGUUCAUGAGAAUGAGUCAUUGUC 5054

Qy          5042 TGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAAAGGGTATGTGTGCTTAGCTGA 5101
                  || |:  |  : |::||||| |::||| :  :: | |  || :| |: :| ::||| |
Db          5055 AGAGGUGAACCUUCUUAAAGGAGUUAAGCUUAUUGAUAGUGGAUACGUCUGUUUAGCCGG 5114

Qy          5102 TTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTGCCGTGGTGGTGTCAGTGTTTG 5161
                 :::||: |:  | || |||:||| :  ||| || || :|| | || ||:|: || |: :|
Db          5115 UUUGGUCGUCACGGGCGAGUGGAACUUGCCUGACAAUUGCAGAGGAGGUGUGAGCGUGUG 5174

Qy          5162 TATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAACGCTGGGTGCGTATCACGCCCC 5221
                 : : |: || || || |:| ||||     | || || || |: ||  | :|  || |  |
Db          5175 UCUGGUGGACAAAAGGAUGGAAAGAGCCGACGAGGCCACUCUCGGAUCUUACUACACAGC 5234

Qy          5222 TGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAATTATTCAATAACATCCGAGGA 5281
                  ||:   || || |  :::   :: ||| :  : || ||::|: | |:|||  || ||||
Db          5235 AGCUGCAAAGAAAAGAUUUCAGUUCAAGGUCGUUCCCAAUUAUGCUAUAACCACCCAGGA 5294

Qy          5282 TGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAAAGGAGTGGCTATGGAAGAAGG 5341
                  ||   |||  ||   :||||||: ::||: ||:|: | |   |:|   |:|  ||  ||
Db          5295 CGCGAUGAAAAACGUCUGGCAAGUUUUAGUUAAUAUUAGAAAUGUGAAGAUGUCAGCGGG 5354

Qy          5342 ATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGTAGTACATAAAAATAATGTAAG 5401
                  : |:|:||  : :|: :||||:: |: :|  : :|: : |:  |:| |||:||: :||
Db          5355 UUUCUGUCCGCUUUCUCUGGAGUUUGUGUCGGUGUGUAUUGUUUAUAGAAAUAAUAUAAA 5414

Qy          5402 AAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGGCTCGCCAATTGAACTCACTGA 5461
                 |  |||:::||| ||    |::   |  |:|| ||||||   ||| |: ||||: || ||
Db          5415 AUUAGGUUUGAGAGAGAAGAUUACAAACGUGAGAGACGGAGGGCCCAUGGAACUUACAGA 5474
```

```
Qy       5462 AAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGCTGTGAAACTCGAAAAGGTTCC 5521
              | | |: |::|| |||::| :||| || |: || |:| |  : |  |: | |||| ::|
Db       5475 AGAAGUCGUUGAUGAGUUCAUGGAAGAUGUCCCUAUGUCGAUCAGGCUUGCAAAGUUUCG 5534

Qy       5522 GG------------AAAACAAAAAAGAAATGGTAGGTAATAATGTTAATAAT-------- 5561
                            |||| |   | |       ||| || ||:  :| :||:
Db       5535 AUCUCGAACCGGAAAAAAGAGUGAUGUCCGCAAAGGGAAAAAUAGUAGUAAUGAUCGGUC 5594

Qy       5562 -------AAGAAAATAAATAACAGTGGTAAGAAGGGTTTAAAAATTGAGGAAATTGAGGA 5614
                     || || |   |:|  | :| :||| |   :     ||:       |   || |
Db       5595 AGUGCCGAACAAGAACUAUAGAAAUGUUAAGGAUUUUGGAGGAAUGAGUUUUAAAAAGAA 5654

Qy       5615 TAATGTAAGTGATGACGAGT---------CTATCGCGTCATCGAGTACGTTTTAATCAAT 5665
              :||: :||  ||:|| || :         |: :|||   |:||  : ||::::|   ||:
Db       5655 UAAUUUAAUCGAUGAUGAUUCGGAGGCUACUGUCGCCGAAUCGGAUUCGUUUUA---AAU 5711

Qy       5666 ATGCCTTATACAATCAACTCTCCGAGCCAATTTGTTTACTTATCTTCCGCTTACGCAGAT 5725
              |:| |::| |  |:||   |:||    || :: |: : |:: :| :| || :  || ||
Db       5712 AUGUCUUACAGUAUCACUACUCCAUCUCAGUUCGUGUUCUUGUCAUCAGCGUGGGCCGAC 5771

Qy       5726 CCTGTGCAGCTGATCAATCTGTGTACAAATGCATTGGGTAACCAGTTTCAAACGCAACAA 5785
              ||  :  || : |: ||: : :|:|| ||:|| :: || || |||:::||||| ||||||
Db       5772 CCAAUAGAGUUAAUUAAUUUAUGUACUAAUGCCUUAGGAAAUCAGUUUCAAACACAACAA 5831

Qy       5786 GCTAGGACAACAGTCCAACAGCAATTTGCGGATGCCTGGAAACCTGTGCCTAGTATGACA 5845
              ||: | ||    |: |||   |||::    || |  :|||||||:   ||     : ||
Db       5832 GCUCGAACUGUCGUUCAAAGACAAUUCAGUGAGGUGUGGAAACCUUCACCACAAGUAACU 5891

Qy       5846 GTGAGATTTCCTGCATCGGATTTCTATGTGTATAGATATAATTCGACGCTTGATCCGTTG 5905
              |: || :: ||:|     || ::  | |:|:| || :| ||: ||    : || ||| :
Db       5892 GUUAGGUUCCCUGACAGUGACUUUAAGGUGUACAGGUACAAUGCGGUAUUAGACCCGCUA 5951

Qy       5906 ATCACGGCGTTATTAAATAGCTTTGATACTAGAAATAGAATAATAGAGGTTGATAATCAA 5965
               :||| ||  : ::|  :   :: || ||:|||||:||||:||:||| |::|| ||:||
Db       5952 GUCACAGCACUGUUAGGUGCAUUCGACACUAGAAAUAGAAUAAUAGAAGUUGAAAAUCAG 6011

Qy       5966 CCCGCACCGAATACTACTGAAATCGTTAACGCGACTCAGAGGGTAGACGATGCTACTGTA 6025
               |    || |  ||: | ||||   :  | || ||:|  || |:|||||| || || |:
Db       6012 GCGAACCCCACGACUGCCGAAACGUUAGAUGCUACUCGUAGAGUAGACGACGCAACGGUG 6071

Qy       6026 GCTATAAGGGCTTCAATCAATAATTTGGCTAATGAACTGGTTCGTGGAACTGGCATGTTC 6085
              || |:||||   | |: ||:||:::       ||| :| :  | ||||| ||    :
Db       6072 GCCAUAAGGAGCGCGAUAAAUAAUUUAAUAGUAGAAUUGAUCAGAGGAACCGGAUCUUAU 6131

Qy       6086 AATCAAGCAGGCTTTGAGACTGCTAGTGGACTTGTCTGGACCACAACTCCGGCTACTTAG 6145
              ||:|        :: ||||   |:  :||  : |: :||||| |   :|| || || :||
Db       6132 AAUCGGAGCUCUUUCGAGAGCUCUUCUGGUUUGGUUUGGACCUCUGGUCCUGCAACCUAG 6191

Qy       6146 CTATT 6150
              | |::
Db       6192 CAAUU 6196


RESULT 11
US-09-259-741-4
; Sequence 4, Application US/09259741
; Patent No. 6033895
;  GENERAL INFORMATION:
;    APPLICANT:  GARGER, STEPHEN
;    APPLICANT:  HOLTZ, R. BARRY
;    APPLICANT:  McCULLOCH, MICHAEL
;    APPLICANT:  TURPEN, THOMAS
;    TITLE OF INVENTION:  A PROCESS FOR ISOLATING AND
;    TITLE OF INVENTION:  PURIFYING VIRUSES SOLUBLE PROTEINS AND PEPTIDES FROM PLANT
;    TITLE OF INVENTION:  SOURCES
;    NUMBER OF SEQUENCES:  5
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  Howrey & Simon
;      STREET:  1299 Pennsylvania Avenue N.W.
;      CITY:  Washington
;      STATE:  DC
;      COUNTRY:  USA
;      ZIP:  20004
;    COMPUTER READABLE FORM:
;      MEDIUM TYPE:  Diskette
;      COMPUTER:  IBM Compatible
;      OPERATING SYSTEM:  DOS
;      SOFTWARE:  FastSEQ for Windows Version 2.0
;    CURRENT APPLICATION DATA:
;      APPLICATION NUMBER:  US/09/259,741
;      FILING DATE:  February 25, 1999
;      CLASSIFICATION:
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:  09/037,751
;      FILING DATE:  March 10, 1998
;    ATTORNEY/AGENT INFORMATION:
;      NAME:  Halluin, Albert P
;      REGISTRATION NUMBER:  25,277
;      REFERENCE/DOCKET NUMBER:  00801.0140.US01
;    TELECOMMUNICATION INFORMATION:
;      TELEPHONE:  650-463-8100
;      TELEFAX:  650-463-8400
;      TELEX:
;  INFORMATION FOR SEQ ID NO:  4:
;    SEQUENCE CHARACTERISTICS:
;      LENGTH:  6475 base pairs
;      TYPE:  nucleic acid
;      STRANDEDNESS:  single
;      TOPOLOGY:  unknown
;    MOLECULE TYPE:  Genomic RNA
US-09-259-741-4

  Query Match             38.6%;  Score 2452.2;  DB 3;  Length 6475;
  Best Local Similarity   44.8%;  Pred. No. 0;
  Matches 2770;  Conservative 1147;  Mismatches 2208;  Indels   60;  Gaps    8;

Qy         20 ACAACAACAATTAAAACAAAAACAACATATTACAAACAACAAACAACAACAATGGCACAC 79
              || |  |  |  |||  | ||||||||:   |   || |   ||||  ||||:|||| ||
Db         18 ACCAACAACAACAAACAACAAACAACAUUACAAUUACUAUUUACAAUUACAAUGGCAUAC 77

Qy         80 ATACAATCTATAATTAGCAACGCCCTTCTTGAAAGCGTGAGTGGTAAAAACACTCTCGTT 139
              | |||  |    |  |     ||  : |: || |  |:  | || || ||| |  : |:
Db         78 ACACAGACAGCUACCACAUCAGCUUUGCUGGACACUGUCCGAGGAAACAACUCCUUGGUC 137

Qy        140 AATGACCTTGCAAGAAGGCGCATGTACGATACGGCCGTGGAAGAATTTAACGCCCGCGAC 199
              ||:|| |: ||||   | ||  : :|||| || || |: ||||| :::||||| || |||
Db        138 AAUGAUCUAGCAAAGCGUCGUCUUUACGACACAGCGGUUGAAGAGUUUAACGCUCGUGAC 197

Qy        200 CGTAGACCAAAGGTCAACTTTTCCAAAACTATTAGCGAAGAGCAAACGCTTCTAGTCTCC 259
              || || || ||||: |||::::| |||   |: ||||| ||||| ||||:: : |   ||
Db        198 CGCAGGCCCAAGGUGAACUUUUCAAAAGUAAUAAGCGAGGAGCAGACGCUUAUUGCUACC 257

Qy        260 AACGCGTACCCGGAGTTCCAGATTACCTTTTATAATACTCAAAATGCCGTACACAGTTTG 319
                 |||:| || || ::||| |::|| ::::|:|| || |||||:||||: ||     :
Db        258 CGGGCGUAUCCAGAAUUCCAAAUUACAUUUUAUAACACGCAAAAUGCCGUGCAUUCGCUU 317

Qy        320 GCTGGAGGTTTGAGAGCATTAGAATTGGAATATCTGATGCTACAAGTTCCCTATGGATCG 379
              || || || ::| || | ::|||| :||||:|:|:||:| : ||| ::|||:| |||:|
Db        318 GCAGGUGGAUUGCGAUCUUUAGAACUGGAAUAUCUGAUGAUGCAAAUUCCCUACGGAUCA 377

Qy        380 CCGACATATGATATAGGTGGGAACTTTGCAGCACATTTGTTCAAAGGCAGGGATTACGTG 439
                ||| :|:|| |:||| ||||| :::||| | ||: :|::||| ||  | |  :| |:
Db        378 UUGACUUAUGACAUAGGCGGGAAUUUUGCAUCGCAUCUGUUCAAGGGACGAGCAUAUGUA 437

Qy        440 CATTGCTGTATGCCCAATCTGGACATACGAGATATAATGAGGCACGAAGGACAAAAGGAC 499
              || :||:| |:|||||| |:|||| : ||||| |: |:| |||||||||| || || |||
Db        438 CACUGCUGCAUGCCCAACCUGGACGUUCGAGACAUCAUGCGGCACGAAGGCCAGAAAGAC 497

Qy        500 TCAATTGAGATGTATTTGTCCAGATTGTCTCGTTCTAACAAGGTAATTCCTGAGTTTCAA 559
                 |::||  : :|  : :| ||  :     |       ||   | : ||  | :: |||
Db        498 AGUAUUGAACUAUACCUUUCUAGGCUAGAGAGAGGGGGGAAAACAGUCCCCAACUUCCAA 557

Qy        560 AGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAAGTCTGCTGCTCTAAAACTTTT 619
              | ||| || ::: |||| :| ||||||  :||  | || |    |:|    || ||:::
Db        558 AAGGAAGCAUUUGACAGAUACGCAGAAAUUCCUGAAGACGCUGUCUGUCACAAUACUUUC 617
```

```
Qy         620 CAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGAAGATACGCTGTTGCTCTGCAC 679
               |||      |||   || |||    || |    || |||   :| ||  ::|| |: |||
Db         618 CAGACAAUGCGACAUCAGCCGAUGCAGCAAUCAGGCAGAGUGUAUGCCAUUGCGCUACAC 677

Qy         680 AGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCGTTAATATCTAAGAATATACAT 739
               ||  : :|:|| |: || |   |:|||:: || || ||  :  :    || ||: : ||:
Db         678 AGCAUAUAUGACAUACCAGCCGAUGAGUUCGGGGCGGCACUCUUGAGGAAAAAUGUCCAU 737

Qy         740 GTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTACTAGACCAGACGGAGGTTACG 799
                  :| :|:|| ||:: |   ::  | ||     :  : |: ||  |  |  | |: |
Db         738 ACGUGCUAUGCCGCUUUCCACUUCUCUGAGAACCUGCUUCUUGAAGAUUCAUACGUCAAU 797

Qy         800 CTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGATGATGTTTCTTTTTTCTTTGCT 859
                :  | ||||:   |||   :::     | || || ||  |  :  | ::::  :::||
Db         798 UUGGACGAAAUCAACGCGUGUUUUUCGCGCGAUGGAGACAAGUUGACCUUUUCUUUUGCA 857

Qy         860 GATGAAAGTACTTTAAATTATAGTCATAAATACAAAAATATCTTGCATTATGTAGTTAAA 919
                  || ||:||: : ||::|: |:||:|  :|    ||:|:  :  | :|:|:    |||
Db         858 UCAGAGAGUACUCUUAAUUAUUGUCAUAGUUAUUCUAAUAUUCUUAAGUAUGUGUGCAAA 917

Qy         920 TCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAGGAATTTTTAGTCACTAGGGTT 979
                |::||:: || || :|:| :|||   |:::|| : ||||| :::::||:||| || |::
Db         918 ACUUACUUCCCGGCCUCUAAUAGAGAGGUUUACAUGAAGGAGUUUUUAGUCACCAGAGUU 977

Qy         980 AATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTATATTCTGTACAAGAGTGTTAGA 1039
               ||:|| :||::::|:|| ::: | | | :|||:|| : : :: :|:||||  |:|:
Db         978 AAUACCUGGUUUUGUAAGUUUUCUAGAAUAGAUACUUUUCUUUUGUACAAAGGUGUGGCC 1037

Qy        1040 CAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATGGAAGACGCCTTTGCTTACAAG 1099
               ||   | |    ||:||:|| |||:: :|:   || |:||||||||| :    ::||||
Db        1038 CAUAAAAGUGUAGAUAGUGAGCAGUUUUAUACUGCAAUGGAAGACGCAUGGCAUUACAAA 1097

Qy        1100 AAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTTAGAGACACGGCTTCGGTTAAC 1159
               || ||  : || |:|: |||||  || |||    :| ::   ||  |  | :| |: ||
Db        1098 AAGACUCUUGCAAUGUGCAACAGCGAGAGAAUCCUCCUUGAGGAUUCAUCAUCAGUCAAU 1157

Qy        1160 TTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCGCTGTTTGAGGGTTCTATTACC 1219
               :  :||:: || || |:|| ||| |:||: |: |:|||  : :: ||   ::|: :
Db        1158 UACUGGUUUCCCAAAAUGAGGGAUAUGGUCAUCGUACCAUUAUUCGACAUUUCUUUGGAG 1217

Qy        1220 AGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGTGACTTCGTTTACACAGTGCTT 1279
               |  |  |||| |||  | |  || |:| : |:       || ::||: :  ||||:||::
Db        1218 ACUAGUAAGAGGACGCGCAAGGAAGUCUUAGUGUCCAAGGAUUUCGUGUUUACAGUGCUU 1277

Qy        1280 AATCATATCAGAACATATCAAGCCAAAGCGTTAACTTACCAGAACGTATTATCTTTCGTG 1339
               || |||  :  |||||:| || || |||||  : || :||   || |: :: :| :: |:
Db        1278 AACCACAUUCGAACAUACCAGGCGAAAGCUCUUACAUACGCAAAUGUUUUGUCCUUUGUC 1337

Qy        1340 GAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACTGCTAGGTCTGAATGGGATGTA 1399
               || :| |:  ||:|  | |: |: |: || ||:|: || || |||:| |||:||||:|:
Db        1338 GAAUCGAUUCGAUCGAGGGUAAUCAUUAACGGUGUGACAGCGAGGUCCGAAUGGGAUGUG 1397

Qy        1400 GATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTCTTGCAGACTAAGCTGGCTGCG 1459
               || ||| |  :  : ||| ||::|:| |:||| :: : | :||| ||:||||: || |
Db        1398 GACAAAUCUUUGUUACAAUCCUUGUCCAUGACGUUUUACCUGCAUACUAAGCUUGCCGUU 1457

Qy        1460 CTTCAAGACGATATAGTAATGGGAAAGTTTCGGTGCTTGGATAAGACCACTTCTGAACTT 1519
               |:  | || ||  :| : |:  | |||::: |   |      || ||    :   | | :
Db        1458 CUAAAGGAUGACUUACUGAUUAGCAAGUUUAGUCUCGGUUCGAAAACGGUGUGCCAGCAU 1517

Qy        1520 ATTTGGGATGAGGTGGGCAAATTTTTTGGAAACGTTTTCCCCACTATCAAAGAGAGATTG 1579
                : :||||:||| :               :::|| ||||  :: ||| |  : ||||||||   :
Db        1518 GUGUGGAUGAGAUUUCGCUGGCGUUUUGGGAACGCAUUUCCCUCCGUGAAAGAGAGGCUC 1577

Qy        1580 GTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTGAAGATCAAGATCCCAGATCTG 1639
                :|| ||||||| :: :    |:    |   | ||  :  |||:|| | : || ||:|:
Db        1578 UUGAACAGGAAACUUAUCAGAGUGGCAGGCGACGCAUUAGAGAUCAGGGUGCCUGAUCUA 1637

Qy        1640 TATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACCAAGTCTGAGGAGTTACCGCAT 1699
               :|:|: || :   ||||| :: |:  |:|| :|||     :|:| |||  : ||
Db        1638 UAUGUGACCUUCCACGACAGAUUAGUGACUGAGUACAAGGCCUCUGUGGACAUGCCUGCG 1697

Qy        1700 CTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATGTACGACGCGTTATCAGAATTA 1759
               |: || |: | |||| |  : |||||| | ||    |:|:|| | ||  : :|||| ::|
Db        1698 CUUGACAUUAGGAAGAAGAUGGAAGAAACGGAAGUGAUGUACAAUGCACUUUCAGAGUUA 1757

Qy        1760 TCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAGTTCAAAGACATGTGCAAGGCT 1819
               :|  :  : | ||   |:|| || ::|||: : |     ::     | |:|:|| |  |:
Db        1758 UCGGUGUUAAGGGAGUCUGACAAAUUCGAUGUUGAUGUUUUUUCCCAGAUGUGCCAAUCU 1817

Qy        1820 TTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTTGCAGTGGCCGAGAATAGAAGC 1879
               :: || |::   ||      ||||||    |: |: |: || |:       ||:   |||
Db        1818 UUGGAAGUUGACCCAAUGACGGCAGCGAAGGUUAUAGUCGCGGUCAUGAGCAAUGAGAGC 1877

Qy        1880 GGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAATGTGGCTAAGGCTCT------T 1933
               ||: : ||:|: || :::||    || || |||| |||:|: ||    ||: :      :
Db        1878 GGUCUGACUCUCACAUUUGAACGACCUACUGAGGCGAAUGUUGCGCUAGCUUUACAGGAU 1937

Qy        1934 AAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCGACATCCGAAGAGGTGAACGTA 1993
                ||   | ||| :| || |  |   :     ::    | | |   |  || |
Db        1938 CAAGAGAAGGCUUCAGAAGGUGCUUUGGUAGUUACCUCAAGAGAAGUUGAAGAACCGUCC 1997

Qy        1994 AATAAATTTTCTATTGCTGAGAAAGGGAGATTGCCTGTGTGTGCAGAAAGTCATGGTTTG 2053
               |  ||   ::| |: ||      || |  |      |   |:   |   |  |:  :  |
Db        1998 AUGAAGGGUUCGAUGGCCAGAGGAGAGUUACAAUUAGCUGGUCUUGCUGGAGAUCAUCCG 2057

Qy        2054 ACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTCAACGATTTCCATAAGGCTTGC 2113
                 |    |  | :   || || ||||| : |||:|  :  |  | :: ||:| |||
Db        2058 GAGUCGUCCUAUUCUAAGAACGAGGAGAUAGAGUCUUUAGAGCAGUUUCAUAUGGCAACG 2117

Qy        2114 GTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTCTACACTGGCTCACTCAAAGTT 2173
               |  ||:    : |::   ||||| |:|   :|| ::|: :|||| ||  |  : ||||::
Db        2118 GCAGAUUCGUUAAUUCGUAAGCAGAUGAGCUCGAUUGUGUACACGGGUCCGAUUAAAGUU 2177

Qy        2174 CAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCGTTGTCCGCCACTGTATCAAAT 2233
               || ||||:||| |||: : : || ||  :|| ||| :|  : :| ||  | |: :| ||:
Db        2178 CAGCAAAUGAAAAACUUUAUCGAUAGCCUGGUAGCAUCACUAUCUGCUGCGGUGUCGAAU 2237

Qy        2234 CTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCTGATTCCAGGGAGAAAGTTGGT 2293
               |:   ||||   |: || ||:  ||  |    :||   :||  || |  | ||  ::||
Db        2238 CUCGUCAAGAUCCUCAAAGAUACAGCUGCUAUUGACCUUGAAACCCGUCAAAAGUUUGGA 2297

Qy        2294 GTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCTGCGGCCAAAGGTCATTCATGG 2353
               |: : |||:|:  | :  |  |||:|| :  :||||||  |||||||  |:||: ||:||
Db        2298 GUCUUGGAUGUUGCAUCUAGGAAGUGGUUAAUCAAACCAACGGCCAAGAGUCAUGCAUGG 2357

Qy        2354 GGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCACTTCTATCTTATGAAGGAGAT 2413
               || |::|:        ||  | ||||      :   || |:: :    :|:|| |   |
Db        2358 GGUGUUGUUGAAACCCACGCGAGGAAGUAUCAUGUGGCGCUUUUGGAAUAUGAUGAGCAG 2417

Qy        2414 AGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTATCATCTGATACAATGGTATAT 2473
                |  :||:|||       || :|||| || |: ||:|:    :|:||  |  : |: :|:
Db        2418 GGUGUGGUGACAUGCGAUGAUUGGAGAAGAGUAGCUGUCAGCUCUGAGUCUGUUGUUUAU 2477

Qy        2474 TCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATGAGAGACGGTGAACCCCACGAA 2533
               :| || |: || || |:|  || :|:| | | |    :  || |||| ||||| || |
Db        2478 UCCGACAUGGCGAAACUCAGAACUCUGCGCAGACUGCUUCGAAACGGAGAACCGCAUGUC 2537

Qy        2534 CCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGTTGTGGAAAGTACAAAGGAGAT 2593
                 :|  |||||| : |: |::|:||| || |: || || :|:|| ||   ||||| |  :
Db        2538 AGUAGCGCAAAGGUUGUUCUUGUGGACGGAGUUCCGGGCUGUGGGAAAACCAAAGAAAUU 2597

Qy        2594 TTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTTCCTGGAAAACAAGCTGCTGCT 2653
                ::   ||  :: |: ::||:|| ||: : |: :: |: ||:|| || ||||| || |
Db        2598 CUUUCCAGGGUUAAUUUUGAUGAAGAUCUAAUUUUAGUACCUGGGAAGCAAGCCGCGGAA 2657

Qy        2654 ATGATCAGAAGAAGGGCTAATTCATCTGGACTGATAAGAGCCACAATGGACAATGTGAGA 2713
               |:||:||||||| | || ||::| :| ||  : |:    ||||| | |||||| |: | |
Db        2658 AUGAUCAGAAGACGUGCGAAUUCCUCAGGGAUUAUUGUGGCCACGAAGGACAACGUUAAA 2717

Qy        2714 ACGGTAGATTCACTTCTAATGCATCCAAAACCGCGATCACA---------CAAGAGGCTT 2764
               || |: ||::|  :  : |:| |:          |  |||          ||||||| :
Db        2718 ACCGUUGAUUCUUUCAUGAUGAAUUUUGGGAAAAGCACACGCUGUCAGUUCAAGAGGUUA 2777

Qy        2765 TTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTTAACTTCCTGGTGCTTATCTCT 2824
               :: |::||:||||||::||:| :||| || ||::|:|::|| :: |: |:|   |: :|
```

```
Db        2778 UUCAUUGAUGAAGGGUUGAUGUUGCAUACUGGUUGUGUUAAUUUUCUUGUGGCGAUGUCA 2837

Qy        2825 GGTTGCGACATCGCATACATTTACGGAGATACACAGCAGATTCCTTTCATTAACAGAGTT 2884
                  :|||| |: |||:|  :::||||||| ||||||||||::|| : ||: || ||||::
Db        2838 UUGUGCGAAAUUGCAUAUGUUUACGGAGACACACAGCAGAUUCCAUACAUCAAUAGAGUU 2897

Qy        2885 CAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAAGTGGATGAAGTTGAGATGAGG 2944
                     ::||||:| |||   ||::::|  ||  :| |||: || || |: ||||   |
Db        2898 UCAGGAUUCCCGUACCCCGCCCAUUUUGCCAAAUUGGAAGUUGACGAGGUGGAGACACGC 2957

Qy        2945 AGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTCCTACAATCGAAGTACGAAGGA 3004
               || || || |:  | :| ||||  ||:|: |    ::  |:  |   ||  :| || ||
Db        2958 AGAACUACUCUCCGUUGUCCAGCCGAUGUCACACAUUAUCUGAACAGGAGAUAUGAGGGC 3017

Qy        3005 GCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCATCTGAGATGATAGGCGGTAAG 3064
                  |: |  | |||::|  | |:  ||   :| |: :|    ||||:| : |||||
Db        3018 UUUGUCAUGAGCACUUCUUCGGUUAAAAAGUCUGUUUCGCAGGAGAUGGUCGGCGGAGCC 3077

Qy        3065 GGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGGAAAATTGTAACTTTCACTCAGGCT 3124
               |  |:  : ||     : :| |||||  :  | || || |:  : ||::: || ||  |
Db        3078 GCCGUGAUCAAUCCGAUCUCAAAACCCUUGCAUGGCAAGAUCCUGACUUUUACCCAAUCG 3137

Qy        3125 GATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTGAACACCGTTCATGAGATCCAA 3184
               ||:|||   |   :       |  || :|:    |:|:  |||| |: ||:||  : |||
Db        3138 GAUAAAGAAGCUCUGCUUUCAAGAGGGUAUUCAGAUGUUCACACUGUGCAUGAAGUGCAA 3197

Qy        3185 GGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACGGCAACTCCACTGACTCTGATT 3244
               || || || :     ||:|: :| |: |: || :: ||  | || ||| :  |  : |::
Db        3198 GGCGAGACAUACUCUGAUGUUUCACUAGUUAGGUUAACCCCUACACCAGUCUCCAUCAUU 3257

Qy        3245 TCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGACACACAAAGAGCTTCAAATAT 3304
                |         ||| ||:|:: : |:|||  :| | || |||||        :||| :|
Db        3258 GCAGGAGACAGCCCACAUGUUUUGGUCGCAUUGUCAAGGCACACCUGUUCGCUCAAGUAC 3317

Qy        3305 TACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGTGATTTGTCTTCTTTAAGCTCC 3364
               :|||| |: |:  : ||:||:::||:     |: |::|| ||: :        : |||:|
Db        3318 UACACUGUUGUUAUGGAUCCUUUAGUUAGUAUCAUUAGAGAUCUAGAGAAACUUAGCUCG 3377

Qy        3365 TTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGATAGCAATTACAGATGGATGCA 3424
               : | : ::||| |:|:|:| ||: || ||||| |    |:|||||::|||||: ||  |
Db        3378 UACUUGUUAGAUAUGUAUAAGGUCGAUGCAGGAACACAAUAGCAAUUACAGAUUGACUCG 3437

Qy        3425 GTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAATCAGGAGACTTTCCAGATCTA 3484
               |:|::||||||:   ||:|: :::|: ||| | || ||  | || ||  :: | ||: :
Db        3438 GUGUUCAAAGGUUCCAAUCUUUUUGUUGCAGCGCCAAAGACUGGUGAUAUUUCUGAUAUG 3497

Qy        3485 CAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACTATACTTAACAAGTATGATGCT 3544
               |||:: :| :| ||:   :| |:||| || || || || |:  : || || : :||:||:
Db        3498 CAGUUUUACUAUGAUAAGUGUCUCCCAGGCAACAGCACCAUGAUGAAUAAUUUUGAUGCU 3557

Qy        3545 GTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAGGATTGTGTTCTTGATTTTTCC 3604
               |::||||:||||::   :|| | :    : ||:|: || ||::|  :  : ||: : :|
Db        3558 GUUACCAUGAGGUUGACUGACAUUUCAUUGAAUGUCAAAGAUUGCAUAUUGGAUAUGUCU 3617

Qy        3605 AAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTAGAGCCAGTTTTGCGTACCGCG 3664
               ||   : :: |   ||| |||||    |    |   |:|   ||  :  : || || |||
Db        3618 AAGUCUGUUGCUGCGCCUAAGGAUCAAAUCAAACCACUAAUACCUAUGGUACGAACGGCG 3677

Qy        3665 GCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTGGTTGCAATGATTAAAAGAAAT 3724
               || |||  |||| |     | ||||:| : ||||: : |:  || |:||::||||| ||
Db        3678 GCAGAAAUGCCACGCCAGACUGGACUAUUGGAAAAUUUAGUGGCGAUGAUUAAAAGGAAC 3737

Qy        3725 TTCAACGCACCAGACCTGACGGGGACGATTGACATTGAGAGCACCGCATCTGTTGTAGTA 3784
               :: |||||||| ||  :| | || |  |::|| |::|| |  || |||:|: : |: |:|
Db        3738 UUUAACGCACCCGAGUUGUCUGGCAUCAUUGAUAUUGAAAAUACUGCAUCUUUAGUUGUA 3797

Qy        3785 GATAAGTTTTTGATAGCTATTTTATTAAAAAAGAAAAATACACAAAAAATATTGCTGGA 3844
               ||:|||::::::||:|| :|:::  ::||| || ||| | |  |||| || | :| :
Db        3798 GAUAAGUUUUUGAUAGUUAUUUGCUUAAAGAAAAAAGAAAACCAAAUAAAAAUGUUUCU 3857

Qy        3845 GTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAACAGGAAAGAAGTACTATTGGAC 3904
                :| : |  |  || :|  : |  |||:||::  |||||   | || | |:|  | : | |
Db        3858 UUGUUCAGUAGAGAGUCUCUCAAUAGAUGGUUAGAAAAGCAGGAACAGGUAACAAUAGGC 3917

Qy        3905 GACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATCGATCAGTACAAGCACATGATC 3964
                |  : ||  | :   |::::  |||: :||| ||  : ||:|||:|||  ||||:||:
Db        3918 CAGCUCGCAGAUUUUGAUUUUGUAGAUUUGCCAGCAGUUGAUCAGUACAGACACAUGAUU 3977

Qy        3965 AAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAGAATGAATACCCTGCTCTGCAA 4024
               || || ||||| || || |||::||||  ::|||: || |  || :|||| ||: :|||
Db        3978 AAAGCACAACCCAAGCAAAAAUUGGACACUUCAAUCCAAACGGAGUACCCGGCUUUGCAG 4037

Qy        4025 ACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTGGCCGGTTTCT---CAGAGCTT 4081
               || |::|: :||||::| || |||:|||  |  |: :: | |   :: :     ||||::
Db        4038 ACGAUUGUGUACCAUUCAAAAAAGAUCAAUGCAAUAUUUGGCCCGUUGUUUAGUGAGCUU 4097

Qy        4082 ACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTTCTTTTCTTTACTAGGAAAACT 4141
               || |||    : |: ||     ::||::| |  |  ::: : :: :: || || || ||
Db        4098 ACUAGGCAAUUACUGGACAGUGUUGAUUCGAGCAGAUUUUUGUUUUUCACAAGAAAGACA 4157

Qy        4142 CCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCGCACGTTCCTATGGATGTGTTA 4201
               ||||  ||||:: | || :: ::|   ||:|:||||   || |: || |:|||:|: ::
Db        4158 CCAGCGCAGAUUGAGGAUUUCUUCGGAGAUCUCGACAGUCAUGUGCCGAUGGAUGUCUUG 4217

Qy        4202 GAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAGTTTCATTGTGCTGTAGAGTAT 4261
               || |:|||:|: :| || :| || || :| ||||| || :: || :|:|| |:||| :|
Db        4218 GAGCUGGAUAUAUCAAAAUACGACAAAUCUCAGAAUGAAUUCCACUGUGCAGUAGAAUAC 4277

Qy        4262 GAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCCGAAGTGTGGAAACAAGGGCAC 4321
               || |: :||  ||||::|||: :  | || :: ::||  ||||: :|||||||||||||
Db        4278 GAGAUCUGGCGAAGAUUGGGUUUUGAAGACUUCUUGGGAGAAGUUUGGAAACAAGGGCAU 4337

Qy        4322 AGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAGACATGTCTGTGGTATCAAAGG 4381
               || || || ||  : |||||::| |  || || |: || || :|  : :||:|:|||||
Db        4338 AGAAAGACCACCCUCAAGGAUUAUACCGCAGGUAUAAAAACUUGCAUCUGGUAUCAAAGA 4397

Qy        4382 AAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTTATAATAGCAGCTTGCTTGGGT 4441
               || ||||| || |: || || ::||: || || |:|:  |: |: || || :| ::||
Db        4398 AAGAGCGGGGACGUCACGACGUUCAUUGGAAACACUGUGAUCAUUGCUGCAUGUUUGGCC 4457

Qy        4442 TCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTTTGTGGAGACGATTCCGTTTTG 4501
               :| |:| : ||||:||| ||  : |:||||| ||  ::::| || |||||:    :  :|
Db        4458 UCGAUGCUUCCGAUGGAGAAAAUAAUCAAAGGAGCCUUUUGCGGUGACGAUAGUCUGCUG 4517

Qy        4502 TATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCATGTGCTAATCTCATGTGGAAT 4561
               :| :::||||||||::  || :: || ||  : ||    :  || ||:|: |:|:||||:
Db        4518 UACUUUCCAAAGGGUUGUGAGUUUCCGGAUGUGCAACACUCCGCGAAUCUUAUGUGGAAU 4577

Qy        4562 TTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTTTGTGGTAGATACATCATACAC 4621
               :::|| || ||||:|: :| |||   |:| || :||::::| || |||:|  : |:|||
Db        4578 UUUGAAGCAAAACUGUUUAAAAAACAGUAUGGAUACUUUUGCGGAAGAUAUGUAAUACAU 4637

Qy        4622 CATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAGTTGATCTCCAAACTTGGGGCA 4681
               || || |  |||   |: |:|:|::| ||:||  : |||::||:|:| ||||::|| ||
Db        4638 CACGACAGAGGAUGCAUUGUGUAUUACGAUCCCCUAAAGUUGAUCUCGAAACUUGGUGCU 4697

Qy        4682 AAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGGGTGTCTTTGTGCGATGTTGCT 4741
               ||||| |:||||||::  || |||:: || |||:: ||   |:|: :  :| ||:|::||:
Db        4698 AAACACAUCAAGGAUUGGGAACACUUGGAGGAGUUCAGAAGGUCUCUUUGUGAUGUUGCU 4757

Qy        4742 TGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTGAACGCAGCTATCAAGGAGGTT 4801
                 ::|| :    || :|    :     :   | ||| :| |||  ||: :   |||||::
Db        4758 GUUUCGUUGAACAAUUGUGCGUA---UUACACACAGUUGGACGACGCUGUAUGGGAGGUU 4814

Qy        4802 CATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGTGTTAACAAATTTTTGTGTGAT 4861
               ||:|| |||||   :   ||::||:::| :: :||  |: :    || : :::|: :||:
Db        4815 CAUAAGACCGCCCCUCCAGGUUCGUUUGUUUAUAAAAGUCUGGUGAAGUAUUUGUCUGAU 4874

Qy        4862 AAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAGTCTCAGAGATACTGTCAAAAT 4921
               ||| :: : :::|||| :::|::: :| |:|||: :   : : | ||  |  |: || |:
Db        4875 AAAGUUCUUUUUAGAAGUUUGUUUAUAGAUGGCUCUAGUUGUUAAAGGAAAAGUGAAUAU 4934

Qy        4922 TAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACTTCCGGCATTCATGACTAAGGT 4981
                |  |||:: |: || |:  | |||  |||  |||:  : ||| |  :  : ||    |:
Db        4935 CAAUGAGUUUAUCGACCUGACAAAAAUGGAGAAGAUCUUACCGUCGAUGUUUACCCCUGU 4994
```

```
Qy       4982 CAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGCTGTTAAGAATGATAGTCTTTC 5041
               |||||:|::|     :| |  |: || || |: |:|| :  : ||||:||     : :|
Db       4995 AAAGAGUGUUAUGUGUUCCAAAGUUGAUAAAAUAAUGGUUCAUGAGAAUGAGUCAUUGUC 5054

Qy       5042 TGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAAAGGGTATGTGTGCTTAGCTGA 5101
               || |:  |  : |::||||| |::||| :  :: | |  || :| |: :| ::||| |
Db       5055 AGAGGUGAACCUUCUUAAAGGAGUUAAGCUUAUUGAUAGUGGAUACGUCUGUUUAGCCGG 5114

Qy       5102 TTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTGCCGTGGTGGTGTCAGTGTTTG 5161
              :::||: |:  | || |||:||||  : || || || :|| | || ||:|: || |: :|
Db       5115 UUUGGUCGUCACGGGCGAGUGGAACUUGCCUGACAAUUGCAGAGGAGGUGUGAGCGUGUG 5174

Qy       5162 TATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAACGCTGGGTGCGTATCACGCCCC 5221
              : : |: || || || |:| ||||     | || || || |: ||  |  :|  || |  |
Db       5175 UCUGGUGGACAAAAGGAUGGAAAGAGCCGACGAGGCCACUCUCGGAUCUUACUACACAGC 5234

Qy       5222 TGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAATTATTCAATAACATCCGAGGA 5281
               ||:   || || |  :::   :: ||| :  : || ||::|: | |:|||  || ||||
Db       5235 AGCUGCAAAGAAAAGAUUUCAGUUCAAGGUCGUUCCCAAUUAUGCUAUAACCACCCAGGA 5294

Qy       5282 TGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAAAGGAGTGGCTATGGAAGAAGG 5341
               ||   |||  ||   :||||||: ::||: ||:|: | |   |:|   |:| ||   ||
Db       5295 CGCGAUGAAAAACGUCUGGCAAGUUUUAGUUAAUAUUAGAAAUGUGAAGAUGUCAGCGGG 5354

Qy       5342 ATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGTAGTACATAAAAATAATGTAAG 5401
               : |:|:||  : :|: :||||:: |: :|  : :|: : |:  |:| |||:||: :||
Db       5355 UUUCUGUCCGCUUUCUCUGGAGUUUGUGUCGGUGUGUAUUGUUUAUAGAAAUAAUAUAAA 5414

Qy       5402 AAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGGCTCGCCAATTGAACTCACTGA 5461
              |  |||:::||| ||    |::   |  |:|| ||||||   ||| |: ||||: || ||
Db       5415 AUUAGGUUUGAGAGAGAAGAUUACAAACGUGAGAGACGGAGGGCCCAUGGAACUUACAGA 5474

Qy       5462 AAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGCTGTGAAACTCGAAAAGGTTCC 5521
              | | |: |::|| |||::| :||| || |: || |:| |  : |  |: | |||| ::|
Db       5475 AGAAGUCGUUGAUGAGUUCAUGGAAGAUGUCCCUAUGUCGAUCAGGCUUGCAAAGUUUCG 5534

Qy       5522 GG------------AAAACAAAAAAGAAATGGTAGGTAATAATGTTAATAAT-------- 5561
                            |||| |   | |       ||| || ||:  :| :||:
Db       5535 AUCUCGAACCGGAAAAAAGAGUGAUGUCCGCAAAGGGAAAAAUAGUAGUAAUGAUCGGUC 5594

Qy       5562 -------AAGAAAATAAATAACAGTGGTAAGAAGGGTTTAAAATTGAGGAAATTGAGGA 5614
                     || || |   |:|  | :| :||| |   :     ||:       |   || |
Db       5595 AGUGCCGAACAAGAACUAUAGAAAUGUUAAGGAUUUUGGAGGAAUGAGUUUUAAAAAGAA 5654

Qy       5615 TAATGTAAGTGATGACGAGT---------CTATCGCGTCATCGAGTACGTTTTAATCAAT 5665
              :||: :||  ||:|| || :         |: :|||   |:||  : ||::::|   ||:
Db       5655 UAAUUUAAUCGAUGAUGAUUCGGAGGCUACUGUCGCCGAAUCGGAUUCGUUUUA---AAU 5711

Qy       5666 ATGCCTTATACAATCAACTCTCCGAGCCAATTTGTTTACTTATCTTCCGCTTACGCAGAT 5725
              |:| |::| |  |:||   |:||    || :: |: : |:: :| :| || :  || ||
Db       5712 AUGUCUUACAGUAUCACUACUCCAUCUCAGUUCGUGUUCUUGUCAUCAGCGUGGGCCGAC 5771

Qy       5726 CCTGTGCAGCTGATCAATCTGTGTACAAATGCATTGGGTAACCAGTTTCAAACGCAACAA 5785
              ||  :  || : |: ||: : :|:|| ||:|| :: || || |||:::||||| ||||||
Db       5772 CCAAUAGAGUUAAUUAAUUUAUGUACUAAUGCCUUAGGAAAUCAGUUUCAAACACAACAA 5831

Qy       5786 GCTAGGACAACAGTCCAACAGCAATTTGCGGATGCCTGGAAACCTGTGCCTAGTATGACA 5845
              ||: | ||    |: |||   |||::    || |  :|||||||:   ||     : ||
Db       5832 GCUCGAACUGUCGUUCAAAGACAAUUCAGUGAGGUGUGGAAACCUUCACCACAAGUAACU 5891

Qy       5846 GTGAGATTTCCTGCATCGGATTTCTATGTGTATAGATATAATTCGACGCTTGATCCGTTG 5905
              |: || :: ||:|     || ::  | |:|:| || :| ||: ||    : || ||| :
Db       5892 GUUAGGUUCCCUGACAGUGACUUUAAGGUGUACAGGUACAAUGCGGUAUUAGACCCGCUA 5951

Qy       5906 ATCACGGCGTTATTAAATAGCTTTGATACTAGAAATAGAATAATAGAGGTTGATAATCAA 5965
               :||| ||  : ::|  :   :: || ||:|||||:||||:||:||| |::|| ||:||
Db       5952 GUCACAGCACUGUUAGGUGCAUUCGACACUAGAAAUAGAAUAAUAGAAGUUGAAAAUCAG 6011

Qy       5966 CCCGCACCGAATACTACTGAAATCGTTAACGCGACTCAGAGGGTAGACGATGCTACTGTA 6025
               |    || |  ||: | ||||   :  | || ||:|  || |:|||||| || || |:
Db       6012 GCGAACCCCACGACUGCCGAAACGUUAGAUGCUACUCGUAGAGUAGACGACGCAACGGUG 6071

Qy       6026 GCTATAAGGGCTTCAATCAATAATTTGGCTAATGAACTGGTTCGTGGAACTGGCATGTTC 6085
              || |:||||    | |: ||:||:::       ||| :| :  | ||||| ||    :
Db       6072 GCCAUAAGGAGCGCGAUAAAUAAUUUAAUAGUAGAAUUGAUCAGAGGAACCGGAUCUUAU 6131

Qy       6086 AATCAAGCAGGCTTTGAGACTGCTAGTGGACTTGTCTGGACCACAACTCCGGCTACTTAG 6145
              ||:|        :: ||||   |:  :||  : |: :||||| |   :|| || || :||
Db       6132 AAUCGGAGCUCUUUCGAGAGCUCUUCUGGUUUGGUUUGGACCUCUGGUCCUGCAACCUAG 6191

Qy       6146 CTATT 6150
              | |::
Db       6192 CAAUU 6196


RESULT 12
US-09-037-751-4
; Sequence 4, Application US/09037751
; Patent No. 6037456
;  GENERAL INFORMATION:
;    APPLICANT:  GARGER, STEPHEN
;    APPLICANT:  HOLTZ, R. BARRY
;    APPLICANT:  McCULLOCH, MICHAEL
;    APPLICANT:  TURPEN, THOMAS
;    TITLE OF INVENTION:  A PROCESS FOR ISOLATING AND
;    TITLE OF INVENTION:  PURIFYING VIRUSES SOLUBLE PROTEINS AND PEPTIDES
;    TITLE OF INVENTION:  FROM PLANT SOURCES
;    NUMBER OF SEQUENCES:  5
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  Howrey & Simon
;      STREET:  1299 Pennsylvania Avenue N.W.
;      CITY:  Washington
;      STATE:  DC
;      COUNTRY:  USA
;      ZIP:  20004
;    COMPUTER READABLE FORM:
;      MEDIUM TYPE:  Diskette
;      COMPUTER:  IBM Compatible
;      OPERATING SYSTEM:  DOS
;      SOFTWARE:  FastSEQ for Windows Version 2.0
;    CURRENT APPLICATION DATA:
;      APPLICATION NUMBER:  US/09/037,751
;      FILING DATE:  10-MAR-1998
;      CLASSIFICATION:
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:
;      FILING DATE:
;    ATTORNEY/AGENT INFORMATION:
;      NAME:  Halluin, Albert P
;      REGISTRATION NUMBER:  25,277
;      REFERENCE/DOCKET NUMBER:  00801.0140.999
;    TELECOMMUNICATION INFORMATION:
;      TELEPHONE:  650-463-8109
;      TELEFAX:  650-463-8400
;      TELEX:
;  INFORMATION FOR SEQ ID NO:  4:
;    SEQUENCE CHARACTERISTICS:
;      LENGTH:  6475 base pairs
;      TYPE:  nucleic acid
;      STRANDEDNESS:  single
;      TOPOLOGY:  unknown
;    MOLECULE TYPE:  Genomic RNA
US-09-037-751-4

  Query Match             38.6%;  Score 2452.2;  DB 3;  Length 6475;
  Best Local Similarity   44.8%;  Pred. No. 0;
  Matches 2770;  Conservative 1147;  Mismatches 2208;  Indels   60;  Gaps    8;

Qy         20 ACAACAACAATTAAAACAAAAACAACATATTACAAACAACAAACAACAACAATGGCACAC 79
              || |  |  |  |||  | ||||||||:   |   || |   ||||  ||||:|||| ||
Db         18 ACCAACAACAACAAACAACAAACAACAUUACAAUUACUAUUUACAAUUACAAUGGCAUAC 77

Qy         80 ATACAATCTATAATTAGCAACGCCCTTCTTGAAAGCGTGAGTGGTAAAAACACTCTCGTT 139
              | |||  |    |  |     ||  : |: || |  |:  | || || ||| |  : |:
Db         78 ACACAGACAGCUACCACAUCAGCUUUGCUGGACACUGUCCGAGGAAACAACUCCUUGGUC 137
```

```
Qy         140 AATGACCTTGCAAGAAGGCGCATGTACGATACGGCCGTGGAAGAATTTAACGCCCGCGAC 199
               ||:|| |: ||||   | ||  : :|||| || || |: ||||| :::||||| || |||
Db         138 AAUGAUCUAGCAAAGCGUCGUCUUUACGACACAGCGGUUGAAGAGUUUAACGCUCGUGAC 197

Qy         200 CGTAGACCAAAGGTCAACTTTTCCAAAACTATTAGCGAAGAGCAAACGCTTCTAGTCTCC 259
               || || || ||||: |||::::| |||   |: ||||| ||||| ||||:: : |   ||
Db         198 CGCAGGCCCAAGGUGAACUUUUCAAAAGUAAUAAGCGAGGAGCAGACGCUUAUUGCUACC 257

Qy         260 AACGCGTACCCGGAGTTCCAGATTACCTTTTATAATACTCAAAATGCCGTACACAGTTTG 319
                  |||:| || || ::||| |::|| ::::|:|| || |||||:||||: ||     :
Db         258 CGGGCGUAUCCAGAAUUCCAAAUUACAUUUUAUAACACGCAAAAUGCCGUGCAUUCGCUU 317

Qy         320 GCTGGAGGTTTGAGAGCATTAGAATTGGAATATCTGATGCTACAAGTTCCCTATGGATCG 379
               || || || ::| || | ::|||| :||||:|:|:||:| : ||| ::|||:| |||:|
Db         318 GCAGGUGGAUUGCGAUCUUUAGAACUGGAAUAUCUGAUGAUGCAAAUUCCCUACGGAUCA 377

Qy         380 CCGACATATGATATAGGTGGGAACTTTGCAGCACATTTGTTCAAAGGCAGGGATTACGTG 439
                 ||| :|:|| |:||| ||||| :::||| | ||: :|::||| ||  | |  :| |:
Db         378 UUGACUUAUGACAUAGGCGGGAAUUUUGCAUCGCAUCUGUUCAAGGGACGAGCAUAUGUA 437

Qy         440 CATTGCTGTATGCCCAATCTGGACATACGAGATATAATGAGGCACGAAGGACAAAAGGAC 499
               || :||:| |:|||||| |:|||| : ||||| |: |:| |||||||||| || || |||
Db         438 CACUGCUGCAUGCCCAACCUGGACGUUCGAGACAUCAUGCGGCACGAAGGCCAGAAAGAC 497

Qy         500 TCAATTGAGATGTATTTGTCCAGATTGTCTCGTTCTAACAAGGTAATTCCTGAGTTTCAA 559
                  |::||  : :|  : :| ||  :     |       ||   | : ||  | :: |||
Db         498 AGUAUUGAACUAUACCUUUCUAGGCUAGAGAGAGGGGGGAAAACAGUCCCCAACUUCCAA 557

Qy         560 AGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAAGTCTGCTGCTCTAAAACTTTT 619
               | ||| || ::: |||| :| ||||||  :||  | || |    |:|    || ||:::
Db         558 AAGGAAGCAUUUGACAGAUACGCAGAAAUUCCUGAAGACGCUGUCUGUCACAAUACUUUC 617

Qy         620 CAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGAAGATACGCTGTTGCTCTGCAC 679
               |||      |||   || |||    || |    || |||   :| ||  ::|| |: |||
Db         618 CAGACAAUGCGACAUCAGCCGAUGCAGCAAUCAGGCAGAGUGUAUGCCAUUGCGCUACAC 677

Qy         680 AGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCGTTAATATCTAAGAATATACAT 739
               ||  : :|:|| |: || |   |:|||:: || || ||  :  :    || ||: : ||:
Db         678 AGCAUAUAUGACAUACCAGCCGAUGAGUUCGGGGCGGCACUCUUGAGGAAAAAUGUCCAU 737

Qy         740 GTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTACTAGACCAGACGGAGGTTACG 799
                  :| :|:|| ||:: ||  ::  | ||     :  : |: ||  |  |  | |: |
Db         738 ACGUGCUAUGCCGCUUUCCACUUCUCUGAGAACCUGCUUCUUGAAGAUUCAUACGUCAAU 797

Qy         800 CTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGATGATGTTTCTTTTTTCTTTGCT 859
                :  | ||||:   |||   :::     | || || ||  |  :  | ::::  :::||
Db         798 UUGGACGAAAUCAACGCGUGUUUUUCGCGCGAUGGAGACAAGUUGACCUUUUCUUUUGCA 857

Qy         860 GATGAAAGTACTTTAAATTATAGTCATAAATACAAAAATATCTTGCATTATGTAGTTAAA 919
                  || ||:||: :|||::|: |:||:|  :|    ||:|:  :  | :|:|:    |||
Db         858 UCAGAGAGUACUCUUAAUUAUUGUCAUAGUUAUUCUAAUAUUCUUAAGUAUGUGUGCAAA 917

Qy         920 TCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAGGAATTTTTAGTCACTAGGGTT 979
                |::||:: || || :|:| :|||   |:::|| : ||||| :::::||:||| || |::
Db         918 ACUUACUUCCCGGCCUCUAAUAGAGAGGUUUACAUGAAGGAGUUUUUAGUCACCAGAGUU 977

Qy         980 AATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTATATTCTGTACAAGAGTGTTAGA 1039
               ||:|| :||::::|:|| ::: | | | :|||:|| : : :: :|:||||  |:|:
Db         978 AAUACCUGGUUUUGUAAGUUUUCUAGAAUAGAUACUUUUCUUUUGUACAAAGGUGUGGCC 1037

Qy        1040 CAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATGGAAGACGCCTTTGCTTACAAG 1099
               ||   | |    ||:||:|| |||:: :|:   || |:||||||||| :    ::||||
Db        1038 CAUAAAAGUGUAGAUAGUGAGCAGUUUUAUACUGCAAUGGAAGACGCAUGGCAUUACAAA 1097

Qy        1100 AAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTTAGAGACACGGCTTCGGTTAAC 1159
               || ||  : || |:|: |||||  || |||    :| ::   ||  |  | :| |: ||
Db        1098 AAGACUCUUGCAAUGUGCAACAGCGAGAGAAUCCUCCUUGAGGAUUCAUCAUCAGUCAAU 1157

Qy        1160 TTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCGCTGTTTGAGGGTTCTATTACC 1219
               :  :||:: || || |:|| ||| |:||: |: |:|||  : :: ||   ::|: :
Db        1158 UACUGGUUUCCCAAAAUGAGGGAUAUGGUCAUCGUACCAUUAUUCGACAUUUCUUUGGAG 1217

Qy        1220 AGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGTGACTTCGTTTACACAGTGCTT 1279
               |  |  |||| |||  | |  || |:| : |:       || ::||: :  ||||:||::
Db        1218 ACUAGUAAGAGGACGCGCAAGGAAGUCUUAGUGUCCAAGGAUUUCGUGUUUACAGUGCUU 1277

Qy        1280 AATCATATCAGAACATATCAAGCCAAAGCGTTAACTTACCAGAACGTATTATCTTTCGTG 1339
               || || |:  |||||:| || || |||||  : || :||   || |: :: :| :: |:
Db        1278 AACCACAUUCGAACAUACCAGGCGAAAGCUCUUACAUACGCAAAUGUUUUGUCCUUUGUC 1337

Qy        1340 GAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACTGCTAGGTCTGAATGGGATGTA 1399
               || :| |:  ||:|  | |: |: |: || ||:|: || || |||:| |||:||||:|:
Db        1338 GAAUCGAUUCGAUCGAGGGUAAUCAUUAACGGUGUGACAGCGAGGUCCGAAUGGGAUGUG 1397

Qy        1400 GATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTCTTGCAGACTAAGCTGGCTGCG 1459
               || ||| |  :  : ||| ||::|:| |:||| :: : | :||| ||:||||: || |
Db        1398 GACAAAUCUUUGUUACAAUCCUUGUCCAUGACGUUUUACCUGCAUACUAAGCUUGCCGUU 1457

Qy        1460 CTTCAAGACGATATAGTAATGGGAAAGTTTCGGTGCTTGGATAAGACCACTTCTGAACTT 1519
               |:  | || ||  :| : |:  | |||::: |   |      || ||    :   | | :
Db        1458 CUAAAGGAUGACUUACUGAUUAGCAAGUUUAGUCUCGGUUCGAAAACGGUGUGCCAGCAU 1517

Qy        1520 ATTTGGGATGAGGTGGGCAAATTTTTTGGAAACGTTTTCCCCACTATCAAAGAGAGATTG 1579
                : :||||:||| :          :::|| ||||  :: ||| |  : ||||||||  :
Db        1518 GUGUGGGAUGAGAUUUCGCUGGCGUUUGGGAACGCAUUUCCCUCCGUGAAAGAGAGGCUC 1577

Qy        1580 GTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTGAAGATCAAGATCCCAGATCTG 1639
                :|| ||||||| :: :    |:    |   | ||  :  |||:|| | : || ||:|:
Db        1578 UUGAACAGGAAACUUAUCAGAGUGGCAGGCGACGCAUUAGAGAUCAGGGUGCCUGAUCUA 1637

Qy        1640 TATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACCAAGTCTGAGGAGTTACCGCAT 1699
               :|:|: || :   | ||||| :: |:  |:|| :|||     :|:| |||  : ||
Db        1638 UAUGUGACCUUCCACGACAGAUUAGUGACUGAGUACAAGGCCUCUGUGGACAUGCCUGCG 1697

Qy        1700 CTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATGTACGACGCGTTATCAGAATTA 1759
               |: || |: | |||| |  : |||||| | ||    |:|:|| | ||  : :|||| ::|
Db        1698 CUUGACAUUAGGAAGAAGAUGGAAGAAACGGAAGUGAUGUACAAUGCACUUUCAGAGUUA 1757

Qy        1760 TCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAGTTCAAAGACATGTGCAAGGCT 1819
               :|  :  : | ||   |:|| || ::|||: : |     ::     | |:|:|| |  |:
Db        1758 UCGGUGUUAAGGGAGUCUGACAAAUUCGAUGUUGAUGUUUUUUCCCAGAUGUGCCAAUCU 1817

Qy        1820 TTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTTGCAGTGGCCGAGAATAGAAGC 1879
               :: || |::   ||      ||||||    |: |: |: || |:       ||:   |||
Db        1818 UUGGAAGUUGACCCAAUGACGGCAGCGAAGGUUAUAGUCGCGGUCAUGAGCAAUGAGAGC 1877

Qy        1880 GGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAATGTGGCTAAGGCTCT------T 1933
               ||: : ||:|: || :::||    || || |||| |||:|: ||    ||: :      :
Db        1878 GGUCUGACUCUCACAUUUGAACGACCUACUGAGGCGAAUGUUGCGCUAGCUUUACAGGAU 1937

Qy        1934 AAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCGACATCCGAAGAGGTGAACGTA 1993
                ||   | ||| :| || |  |   :     ::    | | |   |  || |
Db        1938 CAAGAGAAGGCUUCAGAAGGUGCUUUGGUAGUUACCUCAAGAGAAGUUGAAGAACCGUCC 1997

Qy        1994 AATAAATTTTCTATTGCTGAGAAAGGGAGATTGCCTGTGTGTGCAGAAAGTCATGGTTTG 2053
               |  ||   ::| |: ||      || |  |      |   |:   |   |  |:  :  |
Db        1998 AUGAAGGGUUCGAUGGCCAGAGGAGAGUUACAAUUAGCUGGUCUUGCUGGAGAUCAUCCG 2057

Qy        2054 ACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTCAACGATTTCCATAAGGCTTGC 2113
                 |    |  | :   || || ||||| : |||:|  :  |  | :: ||:| |||
Db        2058 GAGUCGUCCUAUUCUAAGAACGAGGAGAUAGAGUCUUUAGAGCAGUUUCAUAUGGCAACG 2117

Qy        2114 GTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTCTACACTGGCTCACTCAAAGTT 2173
               |  ||:    : |::   ||||| |:|   :|| ::|: :|||| ||  |  : ||||::
Db        2118 GCAGAUUCGUUAAUUCGUAAGCAGAUGAGCUCGAUUGUGUACACGGGUCCGAUUAAAGUU 2177

Qy        2174 CAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCGTTGTCCGCCACTGTATCAAAT 2233
               || ||||:||| |||: : : || ||  :|| ||| :|  : :| ||  | |: :| ||:
Db        2178 CAGCAAAUGAAAAACUUUAUCGAUAGCCUGGUAGCAUCACUAUCUGCUGCGGUGUCGAAU 2237

Qy        2234 CTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCTGATTCCAGGGAGAAAGTTGGT 2293
               |:   ||||   |: || ||:  ||  |    :||   :||  || |  | ||  ::||
Db        2238 CUCGUCAAGAUCCUCAAAGAUACAGCUGCUAUUGACCUUGAAACCCGUCAAAAGUUUGGA 2297

Qy        2294 GTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCTGCGGCCAAAGGTCATTCATGG 2353
               |: : |||:|:  | :  |  |||:|| :  :||||||  |||||||  |:||: ||:||
```

```
Db          2298 GUCUUGGAUGUUGCAUCUAGGAAGUGGUUAAUCAAACCAACGGCCAAGAGUCAUGCAUGG 2357

Qy          2354 GGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCACTTCTATCTTATGAAGGAGAT 2413
                 || |::|:        ||  | ||||      :   || |:: :    :|:|| |   |
Db          2358 GGUGUUGUUGAAACCCACGCGAGGAAGUAUCAUGUGGCGCUUUUGGAAUAUGAUGAGCAG 2417

Qy          2414 AGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTATCATCTGATACAATGGTATAT 2473
                  |  :||:|||       || :|||| || |: ||:|:    :|:||  |  : |: :|:
Db          2418 GGUGUGGUGACAUGCGAUGAUUGGAGAAGAGUAGCUGUCAGCUCUGAGUCUGUUGUUUAU 2477

Qy          2474 TCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATGAGAGACGGTGAACCCCACGAA 2533
                 :| || |: || || |:|  || :|:| | | |    :  || |||| ||||| || |
Db          2478 UCCGACAUGGCGAAACUCAGAACUCUGCGCAGACUGCUUCGAAACGGAGAACCGCAUGUC 2537

Qy          2534 CCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGTTGTGGAAAGTACAAAGGAGAT 2593
                   :|  |||||| : |: |::|:||| || |: || || :|:|| ||   ||||| |  :
Db          2538 AGUAGCGCAAAGGUUGUUCUUGUGGACGGAGUUCCGGGCUGUGGGAAAACCAAAGAAAUU 2597

Qy          2594 TTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTTCCTGGAAAACAAGCTGCTGCT 2653
                  ::   ||  :: |: ::||:|| ||: : |: :: |: ||:|| || |||||| || |
Db          2598 CUUUCCAGGGUUAAUUUUGAUGAAGAUCUAAUUUUAGUACCUGGGAAGCAAGCCGCGGAA 2657

Qy          2654 ATGATCAGAAGAAGGGCTAATTCATCTGGACTGATAAGAGCCACAATGGACAATGTGAGA 2713
                 |:||:||||||| | || ||::| :| ||  : |:    ||||| | |||||| |: | |
Db          2658 AUGAUCAGAAGACGUGCGAAUUCCUCAGGGAUUAUUGUGGCCACGAAGGACAACGUUAAA 2717

Qy          2714 ACGGTAGATTCACTTCTAATGCATCCAAAACCGCGATCACA---------CAAGAGGCTT 2764
                 || |: ||::|  :  : |:| |:          |  |||          |||||||  :
Db          2718 ACCGUUGAUUCUUUCAUGAUGAAUUUUGGGAAAAGCACACGCUGUCAGUUCAAGAGGUUA 2777

Qy          2765 TTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTTAACTTCCTGGTGCTTATCTCT 2824
                 :: |::||:||||||::||:| :||| || ||::|:|::|| :: |: |:|   |: :|
Db          2778 UUCAUUGAUGAAGGGUUGAUGUUGCAUACUGGUUGUGUUAAUUUUCUUGUGGCGAUGUCA 2837

Qy          2825 GGTTGCGACATCGCATACATTTACGGAGATACACAGCAGATTCCTTTCATTAACAGAGTT 2884
                    :|||| |: |||:|  :::||||||| ||||||||||::|| : ||: || ||||::
Db          2838 UUGUGCGAAAUUGCAUAUGUUUACGGAGACACACAGCAGAUUCCAUACAUCAAUAGAGUU 2897

Qy          2885 CAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAAGTGGATGAAGTTGAGATGAGG 2944
                       ::||||:| |||   ||::::|  ||  :| |||: || || |: ||||   |
Db          2898 UCAGGAUUCCCGUACCCCGCCCAUUUUGCCAAAUUGGAAGUUGACGAGGUGGAGACACGC 2957

Qy          2945 AGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTCCTACAATCGAAGTACGAAGGA 3004
                 || || || |:  | :| ||||  ||:|: |    ::  |:  |   ||  :| || ||
Db          2958 AGAACUACUCUCCGUUGUCCAGCCGAUGUCACACAUUAUCUGAACAGGAGAUAUGAGGGC 3017

Qy          3005 GCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCATCTGAGATGATAGGCGGTAAG 3064
                    |: |  | |||::|  | |:  ||   :| |: :|    ||||:| : |||||
Db          3018 UUUGUCAUGAGCACUUCUUCGGUUAAAAAGUCUGUUUCGCAGGAGAUGGUCGGCGGAGCC 3077

Qy          3065 GGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGGAAAATTGTAACTTTCACTCAGGCT 3124
                 |  |:  : ||     : :| |||||  :  | || || |:  : ||::: || ||  |
Db          3078 GCCGUGAUCAAUCCGAUCUCAAAACCCUUGCAUGGCAAGAUCCUGACUUUUACCCAAUCG 3137

Qy          3125 GATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTGAACACCGTTCATGAGATCCAA 3184
                 ||:|||   |   :       |  || :|:    |:|:  |||| |: ||:||  : |||
Db          3138 GAUAAAGAAGCUCUGCUUUCAAGAGGGUAUUCAGAUGUUCACACUGUGCAUGAAGUGCAA 3197

Qy          3185 GGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACGGCAACTCCACTGACTCTGATT 3244
                 || || || :     ||:|: :| |: |: || :: ||  | || ||| :  |  : |::
Db          3198 GGCGAGACAUACUCUGAUGUUUCACUAGUUAGGUUAACCCCUACACCAGUCUCCAUCAUU 3257

Qy          3245 TCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGACACACAAAGAGCTTCAAATAT 3304
                  |         ||| ||:|:: : |:|||  :| | || |||||        :||| :|
Db          3258 GCAGGAGACAGCCCACAUGUUUUGGUCGCAUUGUCAAGGCACACCUGUUCGCUCAAGUAC 3317

Qy          3305 TACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGTGATTTGTCTTCTTTAAGCTCC 3364
                 :|||| |: |:  : ||:||:::||:    |: |::|| ||: :        : |||:|
Db          3318 UACACUGUUGUUAUGGAUCCUUUAGUUAGUAUCAUUAGAGAUCUAGAGAAACUUAGCUCG 3377

Qy          3365 TTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGATAGCAATTACAGATGGATGCA 3424
                 : | : ::||| |:|:|:| ||: || ||||| |    |:||||::||||||: ||  |
Db          3378 UACUUGUUAGAUAUGUAUAAGGUCGAUGCAGGAACACAAUAGCAAUUACAGAUUGACUCG 3437

Qy          3425 GTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAATCAGGAGACTTTCCAGATCTA 3484
                 |:|::||||||:   ||:|: :::|: ||| | || ||  | || ||  :: | ||: :
Db          3438 GUGUUCAAAGGUUCCAAUCUUUUUGUUGCAGCGCCAAAGACUGGUGAUAUUUCUGAUAUG 3497

Qy          3485 CAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACTATACTTAACAAGTATGATGCT 3544
                 |||:: :| :| ||:   :| |:||| || || || || |:  : || || : :||:||:
Db          3498 CAGUUUUACUAUGAUAAGUGUCUCCCAGGCAACAGCACCAUGAUGAAUAAUUUUGAUGCU 3557

Qy          3545 GTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAGGATTGTGTTCTTGATTTTTCC 3604
                 |::||||:||||::   :|| | :    : ||:|: || ||::|  :  : ||: : :|
Db          3558 GUUACCAUGAGGUUGACUGACAUUUCAUUGAAUGUCAAAGAUUGCAUAUUGGAUAUGUCU 3617

Qy          3605 AAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTAGAGCCAGTTTTGCGTACCGCG 3664
                 ||   : :: |   ||| |||||    |    |   |:|   ||  :  : || || |||
Db          3618 AAGUCUGUUGCUGCGCCUAAGGAUCAAAUCAAACCACUAAUACCUAUGGUACGAACGGCG 3677

Qy          3665 GCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTGGTTGCAATGATTAAAAGAAAT 3724
                 || |||  |||| |     | ||||:| : |||||: : |: || |:||::||||| ||
Db          3678 GCAGAAAUGCCACGCCAGACUGGACUAUUGGAAAAUUUAGUGGCGAUGAUUAAAAGGAAC 3737

Qy          3725 TTCAACGCACCAGACCTGACGGGGACGATTGACATTGAGAGCACCGCATCTGTTGTAGTA 3784
                 :: ||||||||| ||  :| | || |  |::|| |::|| |  || |||:|: : |: |:|
Db          3738 UUUAACGCACCCGAGUUGUCUGGCAUCAUUGAUAUUGAAAAUACUGCAUCUUUAGUUGUA 3797

Qy          3785 GATAAGTTTTTTGATAGCTATTTTATTAAAAAAGAAAAATACACAAAAAATATTGCTGGA 3844
                 ||:|||::::::||:|| :|:::  ::||| || ||| | |  |||| || | :| :
Db          3798 GAUAAGUUUUUUGAUAGUUAUUUGCUUAAAGAAAAAAGAAAACCAAAUAAAAAUGUUUCU 3857

Qy          3845 GTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAACAGGAAAGAAGTACTATTGGAC 3904
                  :| : |  |  |  :|  : |  |||:||:: |||||   | || | |:|  | : | |
Db          3858 UUGUUCAGUAGAGAGUCUCUCAAUAGAUGGUUAGAAAAGCAGGAACAGGUAACAAUAGGC 3917

Qy          3905 GACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATCGATCAGTACAAGCACATGATC 3964
                  |  : ||  | :   |::::  |||: :||| ||  : ||:|||:|||  ||||:||:
Db          3918 CAGCUCGCAGAUUUUGAUUUUGUAGAUUUGCCAGCAGUUGAUCAGUACAGACACAUGAUU 3977

Qy          3965 AAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAGAATGAATACCCTGCTCTGCAA 4024
                 || || ||||| || || |||::||||  ::|||: || |  |  :|||| ||: :|||
Db          3978 AAAGCACAACCCAAGCAAAAAUUGGACACUUCAAUCCAAACGGAGUACCCGGCUUUGCAG 4037

Qy          4025 ACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTGGCCGGTTTCT---CAGAGCTT 4081
                 || |::|: :||||::| ||  |||:||| |  |: :: | |   :: :     ||||::
Db          4038 ACGAUUGUGUACCAUUCAAAAAAGAUCAAUGCAAUAUUUGGCCCGUUGUUUAGUGAGCUU 4097

Qy          4082 ACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTTCTTTTCTTTACTAGGAAAACT 4141
                 || |||    : |: ||     ::||::| |  |  ::: : :: :: || || || ||
Db          4098 ACUAGGCAAUUACUGGACAGUGUUGAUUCGAGCAGAUUUUUGUUUUUCACAAGAAAGACA 4157

Qy          4142 CCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCGCACGTTCCTATGGATGTGTTA 4201
                 ||||  ||||:: | || :: ::|   ||:|:||||   || |: || |:|||:|: ::
Db          4158 CCAGCGCAGAUUGAGGAUUUCUUCGGAGAUCUCGACAGUCAUGUGCCGAUGGAUGUCUUG 4217

Qy          4202 GAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAGTTTCATTGTGCTGTAGAGTAT 4261
                 || |:|||:|: :| || :| || || :| ||||| || :: || :|:|| |:||| :|
Db          4218 GAGCUGGAUAUAUCAAAAUACGACAAAUCUCAGAAUGAAUUCCACUGUGCAGUAGAAUAC 4277

Qy          4262 GAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCCGAAGTGTGGAAACAAGGGCAC 4321
                 || |: :||  ||||::|||: :  | || :: ::||  ||||: :||||||||||||||
Db          4278 GAGAUCUGGCGAAGAUUGGGUUUUGAAGACUUCUUGGGAGAAGUUUGGAAACAAGGGCAU 4337

Qy          4322 AGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAGACATGTCTGTGGTATCAAAGG 4381
                 || || || ||  : |||||::| |  || || |: || || :|  : :||:|:|||||
Db          4338 AGAAAGACCACCCUCAAGGAUUAUACCGCAGGUAUAAAAACUUGCAUCUGGUAUCAAAGA 4397

Qy          4382 AAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTTATAATAGCAGCTTGCTTGGGT 4441
                 || ||||| || |: || || ::||: || || ||:|: |: |: || || :| ::||
Db          4398 AAGAGCGGGGACGUCACGACGUUCAUUGGAAACACUGUGAUCAUUGCUGCAUGUUUGGCC 4457

Qy          4442 TCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTTTGTGGAGACGATTCCGTTTTG 4501
                 :| |:| : ||||:||| ||  : |: ||||| || ::::| || |||||:    :  :|
Db          4458 UCGAUGCUUCCGAUGGAGAAAAUAAUCAAAGGAGCCUUUUGCGGUGACGAUAGUCUGCUG 4517
```

```
Qy         4502 TATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCATGTGCTAATCTCATGTGGAAT 4561
                :| :::||||||||::  || :: || ||  : ||    :  || ||:|: |:|:||||:
Db         4518 UACUUUCCAAAGGGUUGUGAGUUUCCGGAUGUGCAACACUCCGCGAAUCUUAUGUGGAAU 4577

Qy         4562 TTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTTTGTGGTAGATACATCATACAC 4621
                :::|| || ||||:|: :| |||   |:| || :||::::| || |||:|  : |:|||
Db         4578 UUUGAAGCAAAACUGUUUAAAAAACAGUAUGGAUACUUUUGCGGAAGAUAUGUAAUACAU 4637

Qy         4622 CATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAGTTGATCTCCAAACTTGGGGCA 4681
                || || |  |||   |: |:|:|::| ||:||  : |||::||:|:| ||||::|| ||
Db         4638 CACGACAGAGGAUGCAUUGUGUAUUACGAUCCCCUAAAGUUGAUCUCGAAACUUGGUGCU 4697

Qy         4682 AAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGGGTGTCTTTGTGCGATGTTGCT 4741
                ||||| |:||||||::  || |||:: || |||:: ||   |:|: : :| ||:|::||:
Db         4698 AAACACAUCAAGGAUUGGGAACACUUGGAGGAGUUCAGAAGGUCUCUUUGUGAUGUUGCU 4757

Qy         4742 TGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTGAACGCAGCTATCAAGGAGGTT 4801
                  ::|| :    || :|    :     :   | ||| :| |||  ||: :   |||||::
Db         4758 GUUUCGUUGAACAAUUGUGCGUA---UUACACACAGUUGGACGACGCUGUAUGGGAGGUU 4814

Qy         4802 CATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGTGTTAACAAATTTTTGTGTGAT 4861
                ||:|| |||||   :   ||::||:::| :: :||  |: :    || : :::|: :||:
Db         4815 CAUAAGACCGCCCCUCCAGGUUCGUUUGUUUAUAAAAGUCUGGUGAAGUAUUUGUCUGAU 4874

Qy         4862 AAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAGTCTCAGAGATACTGTCAAAAT 4921
                ||| :: : :::|||| :::|::: :| |:|||: :   : : | ||  |  |: || |:
Db         4875 AAAGUUCUUUUUAGAAGUUUGUUUAUAGAUGGCUCUAGUUGUUAAAGGAAAAGUGAAUAU 4934

Qy         4922 TAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACTTCCGGCATTCATGACTAAGGT 4981
                 |  |||:: |: || |:  | |||  |||  |||:  : ||| |  :  : ||    |:
Db         4935 CAAUGAGUUUAUCGACCUGACAAAAAUGGAGAAGAUCUUACCGUCGAUGUUUACCCCUGU 4994

Qy         4982 CAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGCTGTTAAGAATGATAGTCTTTC 5041
                 |||||:|::|     :| |  |: || || |: |:|| :  : ||||:||     : :|
Db         4995 AAAGAGUGUUAUGUGUUCCAAAGUUGAUAAAAUAAUGGUUCAUGAGAAUGAGUCAUUGUC 5054

Qy         5042 TGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAAAGGGTATGTGTGCTTAGCTGA 5101
                 || |:  |  : |::||||| |::||| :  :: | |  || :| |: :| ::||| |
Db         5055 AGAGGUGAACCUUCUUAAAGGAGUUAAGCUUAUUGAUAGUGGAUACGUCUGUUUAGCCGG 5114

Qy         5102 TTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTGCCGTGGTGGTGTCAGTGTTTG 5161
                :::||: |:  | || |||:||||  : || || || :|| | || ||:|: || |: :|
Db         5115 UUUGGUCGUCACGGGCGAGUGGAACUUGCCUGACAAUUGCAGAGGAGGUGUGAGCGUGUG 5174

Qy         5162 TATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAACGCTGGGTGCGTATCACGCCCC 5221
                : : |: || || || |:| ||||     | || || || |: ||  | :|  || |  |
Db         5175 UCUGGUGGACAAAAGGAUGGAAAGAGCCGACGAGGCCACUCUCGGAUCUUACUACACAGC 5234

Qy         5222 TGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAATTATTCAATAACATCCGAGGA 5281
                 ||:   || || |  :::   :: ||| :  : || ||::|: | |:|||  || ||||
Db         5235 AGCUGCAAAGAAAAGAUUUCAGUUCAAGGUCGUUCCCAAUUAUGCUAUAACCACCCAGGA 5294

Qy         5282 TGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAAAGGAGTGGCTATGGAAGAAGG 5341
                 ||   |||  ||   :||||||: ::||: ||:|: | |   |:|   |:|  ||  ||
Db         5295 CGCGAUGAAAAACGUCUGGCAAGUUUUAGUUAAUAUUAGAAAUGUGAAGAUGUCAGCGGG 5354

Qy         5342 ATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGTAGTACATAAAAATAATGTAAG 5401
                 : |:|:||  : :|: :||||:: |: :|  : :|: : |:  |:| |||:||: :||
Db         5355 UUUCUGUCCGCUUUCUCUGGAGUUUGUGUCGGUGUGUAUUGUUUAUAGAAAUAAUAUAAA 5414

Qy         5402 AAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGGCTCGCCAATTGAACTCACTGA 5461
                |  |||:::||| ||    |::   |  |:|| ||||||   ||| |: ||||: || ||
Db         5415 AUUAGGUUUGAGAGAGAAGAUUACAAACGUGAGAGACGGAGGGCCCAUGGAACUUACAGA 5474

Qy         5462 AAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGCTGTGAAACTCGAAAAGGTTCC 5521
                | | |: |::|| |||::| :||| || |: || |:| |  : |  |: | |||| ::|
Db         5475 AGAAGUCGUUGAUGAGUUCAUGGAAGAUGUCCCUAUGUCGAUCAGGCUUGCAAAGUUUCG 5534

Qy         5522 GG------------AAAACAAAAAAGAAATGGTAGGTAATAATGTTAATAAT-------- 5561
                              |||| |   | |       ||| || ||:  :| :||:
Db         5535 AUCUCGAACCGGAAAAAAGAGUGAUGUCCGCAAAGGGAAAAAUAGUAGUAAUGAUCGGUC 5594

Qy         5562 -------AAGAAAATAAATAACAGTGGTAAGAAGGGTTTTAAAATTGAGGAAATTGAGGA 5614
                       || || |   |:|  | :| :||| |   :     ||:       |   || |
Db         5595 AGUGCCGAACAAGAACUAUAGAAAUGUUAAGGAUUUUGGAGGAAUGAGUUUUAAAAAGAA 5654

Qy         5615 TAATGTAAGTGATGACGAGT---------CTATCGCGTCATCGAGTACGTTTTAATCAAT 5665
                :||: :||  ||:|| || :         |: :|||   |:||  : ||::::|   ||:
Db         5655 UAAUUUAAUCGAUGAUGAUUCGGAGGCUACUGUCGCCGAAUCGGAUUCGUUUUA---AAU 5711

Qy         5666 ATGCCTTATACAATCAACTCTCCGAGCCAATTTGTTTACTTATCTTCCGCTTACGCAGAT 5725
                |:| |::| |  |:||   |:||    || :: |: : |:: :| :| || :  || ||
Db         5712 AUGUCUUACAGUAUCACUACUCCAUCUCAGUUCGUGUUCUUGUCAUCAGCGUGGGCCGAC 5771

Qy         5726 CCTGTGCAGCTGATCAATCTGTGTACAAATGCATTGGGTAACCAGTTTCAAACGCAACAA 5785
                ||  :  || : |: ||: : :|:|| ||:|| :: || || |||:::||||| ||||||
Db         5772 CCAAUAGAGUUAAUUAAUUUAUGUACUAAUGCCUUAGGAAAUCAGUUUCAAACACAACAA 5831

Qy         5786 GCTAGGACAACAGTCCAACAGCAATTTGCGGATGCCTGGAAACCTGTGCCTAGTATGACA 5845
                ||: | ||    |: |||   |||::    || |  :|||||||:   ||     : ||
Db         5832 GCUCGAACUGUCGUUCAAAGACAAUUCAGUGAGGUGUGGAAACCUUCACCACAAGUAACU 5891

Qy         5846 GTGAGATTTCCTGCATCGGATTTCTATGTGTATAGATATAATTCGACGCTTGATCCGTTG 5905
                |: || :: ||:|     || ::  | |:|:| || :| ||: ||    : || ||| :
Db         5892 GUUAGGUUCCCUGACAGUGACUUUAAGGUGUACAGGUACAAUGCGGUAUUAGACCCGCUA 5951

Qy         5906 ATCACGGCGTTATTAAATAGCTTTGATACTAGAAATAGAATAATAGAGGTTGATAATCAA 5965
                 :||| ||  : ::|  :   :: || ||:|||||:||||:||:||| |::|| ||:||
Db         5952 GUCACAGCACUGUUAGGUGCAUUCGACACUAGAAAUAGAAUAAUAGAAGUUGAAAAUCAG 6011

Qy         5966 CCCGCACCGAATACTACTGAAATCGTTAACGCGACTCAGAGGGTAGACGATGCTACTGTA 6025
                 |    || |  ||: | ||||   :  | || ||:|  || |:|||||| || || |:
Db         6012 GCGAACCCCACGACUGCCGAAACGUUAGAUGCUACUCGUAGAGUAGACGACGCAACGGUG 6071

Qy         6026 GCTATAAGGGCTTCAATCAATAATTTGGCTAATGAACTGGTTCGTGGAACTGGCATGTTC 6085
                || |:||||    | |: ||:||:::       ||| :| :  | ||||| ||    :
Db         6072 GCCAUAAGGAGCGCGAUAAAUAAUUUAAUAGUAGAAUUGAUCAGAGGAACCGGAUCUUAU 6131

Qy         6086 AATCAAGCAGGCTTTGAGACTGCTAGTGGACTTGTCTGGACCACAACTCCGGCTACTTAG 6145
                ||:|        :: ||||   |:  :||  : |: :||||| |   :|| || || :||
Db         6132 AAUCGGAGCUCUUUCGAGAGCUCUUCUGGUUUGGUUUGGACCUCUGGUCCUGCAACCUAG 6191

Qy         6146 CTATT 6150
                | |::
Db         6192 CAAUU 6196


RESULT 13
US-09-466-422-4
; Sequence 4, Application US/09466422
; Patent No. 6303779
;  GENERAL INFORMATION:
;       APPLICANT: GARGER, STEPHEN
;                  HOLTZ, R. BARRY
;                  McCULLOCH, MICHAEL
;                  TURPEN, THOMAS
;       TITLE OF INVENTION: A PROCESS FOR ISOLATING AND
;                           PURIFYING VIRUSES SOLUBLE PROTEINS AND PEPTIDES
;                           FROM PLANT SOURCES
;       NUMBER OF SEQUENCES: 5
;       CORRESPONDENCE ADDRESS:
;            ADDRESSEE: Howrey & Simon
;            STREET: 1299 Pennsylvania Avenue N.W.
;            CITY: Washington
;            STATE: DC
;            COUNTRY: USA
;            ZIP: 20004
;       COMPUTER READABLE FORM:
;            MEDIUM TYPE: Diskette
;            COMPUTER: IBM Compatible
;            OPERATING SYSTEM: DOS
;            SOFTWARE: FastSEQ for Windows Version 2.0
;       CURRENT APPLICATION DATA:
;            APPLICATION NUMBER: US/09/466,422
;            FILING DATE: 17-Dec-1999
;            CLASSIFICATION: <Unknown>
```

```
;          PRIOR APPLICATION DATA:
;               APPLICATION NUMBER: 09/037,751
;               FILING DATE: <Unknown>
;          ATTORNEY/AGENT INFORMATION:
;               NAME: Halluin, Albert P
;               REGISTRATION NUMBER: 25,277
;               REFERENCE/DOCKET NUMBER: 00801.0140.999
;          TELECOMMUNICATION INFORMATION:
;               TELEPHONE: 650-463-8109
;               TELEFAX: 650-463-8400
;               TELEX: <Unknown>
;     INFORMATION FOR SEQ ID NO: 4:
;          SEQUENCE CHARACTERISTICS:
;               LENGTH: 6475 base pairs
;               TYPE: nucleic acid
;               STRANDEDNESS: single
;               TOPOLOGY: unknown
;          MOLECULE TYPE: Genomic RNA
;          SEQUENCE DESCRIPTION: SEQ ID NO: 4:
US-09-466-422-4

  Query Match            38.6%;  Score 2452.2;  DB 3;  Length 6475;
  Best Local Similarity  44.8%;  Pred. No. 0;
  Matches 2770;  Conservative 1147;  Mismatches 2208;  Indels   60;  Gaps    8;

Qy          20 ACAACAACAATTAAAACAAAAACAACATATTACAAACAACAAACAACAACAATGGCACAC 79
               || |  |  |  |||  | ||||||||:   |   || |   ||||  ||||:|||| ||
Db          18 ACCAACAACAACAAACAACAAACAACAUUACAAUUACUAUUUACAAUUACAAUGGCAUAC 77

Qy          80 ATACAATCTATAATTAGCAACGCCCTTCTTGAAAGCGTGAGTGGTAAAAACACTCTCGTT 139
               | |||  |    |  |     ||  : |: || |  |:  | || || ||| |  : |:
Db          78 ACACAGACAGCUACCACAUCAGCUUUGCUGGACACUGUCCGAGGAAACAACUCCUUGGUC 137

Qy         140 AATGACCTTGCAAGAAGGCGCATGTACGATACGGCCGTGGAAGAATTTAACGCCCGCGAC 199
               ||:|| |: ||||   | ||  : :|||| || || |:|||||| :::||||| || |||
Db         138 AAUGAUCUAGCAAAGCGUCGUCUUUACGACACAGCGGUUGAAGAGUUUAACGCUCGUGAC 197

Qy         200 CGTAGACCAAAGGTCAACTTTTCCAAAACTATTAGCGAAGAGCAAACGCTTCTAGTCTCC 259
               || || || ||||: |||::::| |||   |: ||||| ||||| ||||:: : |   ||
Db         198 CGCAGGCCCAAGGUGAACUUUUCAAAAGUAAUAAGCGAGGAGCAGACGCUUAUUGCUACC 257

Qy         260 AACGCGTACCCGGAGTTCCAGATTACCTTTTATAATACTCAAAATGCCGTACACAGTTTG 319
                  |||:| || || ::||| |::|| ::::|:|| || |||||:||||: ||      :
Db         258 CGGGCGUAUCCAGAAUUCCAAAUUACAUUUUAUAACACGCAAAAUGCCGUGCAUUCGCUU 317

Qy         320 GCTGGAGGTTTGAGAGCATTAGAATTGGAATATCTGATGCTACAAGTTCCCTATGGATCG 379
               || || || ::| || | ::|||| :||||:|:|:||:| : ||| ::|||:| |||:|
Db         318 GCAGGUGGAUUGCGAUCUUUAGAACUGGAAUAUCUGAUGAUGCAAAUUCCCUACGGAUCA 377

Qy         380 CCGACATATGATATAGGTGGGAACTTTGCAGCACATTTGTTCAAAGGCAGGGATTACGTG 439
                 ||| :|:|| |:||| ||||| :::||| | ||: :|::||| ||  | |  :| |:
Db         378 UUGACUUAUGACAUAGGCGGGAAUUUUGCAUCGCAUCUGUUCAAGGGACGAGCAUAUGUA 437

Qy         440 CATTGCTGTATGCCCAATCTGGACATACGAGATATAATGAGGCACGAAGGACAAAAGGAC 499
               || :||:| |:|||||| |:|||| : |||||| |: |:| |||||||||| || || |||
Db         438 CACUGCUGCAUGCCCAACCUGGACGUUCGAGACAUCAUGCGGCACGAAGGCCAGAAAGAC 497

Qy         500 TCAATTGAGATGTATTTGTCCAGATTGTCTCGTTCTAACAAGGTAATTCCTGAGTTTCAA 559
                  |::||  : :|  : :| ||  :      |       ||   | : ||  | :: |||
Db         498 AGUAUUGAACUAUACCUUUCUAGGCUAGAGAGAGGGGGAAAAACAGUCCCCAACUUCCAA 557

Qy         560 AGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAAGTCTGCTGCTCTAAAACTTTT 619
               | ||| || ::: |||| :| ||||||  :||  | || |    |:|    || ||:::
Db         558 AAGGAAGCAUUUGACAGAUACGCAGAAAUUCCUGAAGACGCUGUCUGUCACAAUACUUUC 617

Qy         620 CAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGAAGATACGCTGTTGCTCTGCAC 679
               |||      |||   || |||    || |    || |||   :| ||  ::|| |: |||
Db         618 CAGACAAUGCGACAUCAGCCGAUGCAGCAAUCAGGCAGAGUGUAUGCCAUUGCGCUACAC 677

Qy         680 AGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCGTTAATATCTAAGAATATACAT 739
               ||  : :|:|| |: || |   |:|||:: || || ||  :  :    || ||: : ||:
Db         678 AGCAUAUAUGACAUACCAGCCGAUGAGUUCGGGGCGGCACUCUUGAGGAAAAAUGUCCAU 737

Qy         740 GTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTACTAGACCAGACGGAGGTTACG 799
                  :| :|:|| ||:: |   ::  | ||     :  : |: ||  |  |  | |: |
Db         738 ACGUGCUAUGCCGCUUUCCACUUCUCUGAGAACCUGCUUCUUGAAGAUUCAUACGUCAAU 797

Qy         800 CTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGATGATGTTTCTTTTTTCTTTGCT 859
                :  | ||||:   |||   :::     | || || ||  |  :  | ::::  :::||
Db         798 UUGGACGAAAUCAACGCGUGUUUUUCGCGCGAUGGAGACAAGUUGACCUUUUCUUUUGCA 857

Qy         860 GATGAAAGTACTTTAAATTATAGTCATAAATACAAAAATATCTTGCATTATGTAGTTAAA 919
                  || ||:||: : ||::|: |:||:|  :|    ||:|:  :  | :|:|:    |||
Db         858 UCAGAGAGUACUCUUAAUUAUUGUCAUAGUUAUUCUAAUAUUCUUAAGUAUGUGUGCAAA 917

Qy         920 TCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAGGAATTTTTAGTCACTAGGGTT 979
                |::||:: || || :|:| :|||  ||:::|| : ||||| :::::||:||| || |::
Db         918 ACUUACUUCCCGGCCUCUAAUAGAGAGGUUUACAUGAAGGAGUUUUUAGUCACCAGAGUU 977

Qy         980 AATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTATATTCTGTACAAGAGTGTTAGA 1039
               ||:|| :||::::|:|| ::: | | | :|||:|| : : :: :|:||||  |:|:
Db         978 AAUACCUGGUUUUGUAAGUUUUCUAGAAUAGAUACUUUUCUUUUGUACAAAGGUGUGGCC 1037

Qy        1040 CAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATGGAAGACGCCTTTGCTTACAAG 1099
               ||   | |    ||:||:|| |||:: :|:   || |:||||||||| :    ::||||
Db        1038 CAUAAAAGUGUAGAUAGUGAGCAGUUUUAUACUGCAAUGGAAGACGCAUGGCAUUACAAA 1097

Qy        1100 AAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTTAGAGACACGGCTTCGGTTAAC 1159
               || ||  : || |:|: |||||  || |||    :| ::   ||  |  | :| |: ||
Db        1098 AAGACUCUUGCAAUGUGCAACAGCGAGAGAAUCCUCCUUGAGGAUUCAUCAUCAGUCAAU 1157

Qy        1160 TTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCGCTGTTTGAGGGTTCTATTACC 1219
               :  :||:: || || |:|| ||| |:||: |: |:|||  : :: ||   ::|: :
Db        1158 UACUGGUUUCCCAAAAUGAGGGAUAUGGUCAUCGUACCAUUAUUCGACAUUUCUUUGGAG 1217

Qy        1220 AGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGTGACTTCGTTTACACAGTGCTT 1279
               |  |  |||| |||  | |  || |:| : |:       || ::||: :  ||||:||::
Db        1218 ACUAGUAAGAGGACGCGCAAGGAAGUCUUAGUGUCCAAGGAUUUCGUGUUUACAGUGCUU 1277

Qy        1280 AATCATATCAGAACATATCAAGCCAAAGCGTTAACTTACCAGAACGTATTATCTTTCGTG 1339
               || || |:  |||||:| || |||||  : || :||   || |: :: :| :: |:
Db        1278 AACCACAUUCGAACAUACCAGGCGAAAGCUCUUACAUACGCAAAUGUUUUGUCCUUUGUC 1337

Qy        1340 GAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACTGCTAGGTCTGAATGGGATGTA 1399
               || :| |:  ||:|  | |: |: |: || ||:|: || || |||:| |||:||||:|:
Db        1338 GAAUCGAUUCGAUCGAGGGUAAUCAUUAACGGUGUGACAGCGAGGUCCGAAUGGGAUGUG 1397

Qy        1400 GATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTCTTGCAGACTAAGCTGGCTGCG 1459
               || ||| |  :  : ||| ||::|:| |:||| :: : | :||| ||:||||: || |
Db        1398 GACAAAUCUUUGUUACAAUCCUUGUCCAUGACGUUUUACCUGCAUACUAAGCUUGCCGUU 1457

Qy        1460 CTTCAAGACGATATAGTAATGGGAAAGTTTCGGTGCTTGGATAAGACCACTTCTGAACTT 1519
               |:  | || ||  :| : |:  | |||::: |   |      || ||    :   | | :
Db        1458 CUAAAGGAUGACUUACUGAUUAGCAAGUUUAGUCUCGGUUCGAAAACGGUGUGCCAGCAU 1517

Qy        1520 ATTTGGGATGAGGTGGGCAAATTTTTTGGAAACGTTTTCCCCACTATCAAAGAGAGATTG 1579
                : :||||:||| :          :::|| ||||  :: ||| |  : ||||||||  :
Db        1518 GUGUGGGAUGAGAUUUCGCUGGCGUUUGGGAACGCAUUUCCCUCCGUGAAAGAGAGGCUC 1577

Qy        1580 GTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTGAAGATCAAGATCCCAGATCTG 1639
                :|| ||||||| :: :    |:    |   | ||  :  |||:|| | : || ||:|:
Db        1578 UUGAACAGGAAACUUAUCAGAGUGGCAGGCGACGCAUUAGAGAUCAGGGUGCCUGAUCUA 1637

Qy        1640 TATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACCAAGTCTGAGGAGTTACCGCAT 1699
               :|:|: || :   | ||||| :: |:  |:|| :|||     :|:| |||  : ||
Db        1638 UAUGUGACCUUCCACGACAGAUUAGUGACUGAGUACAAGGCCUCUGUGGACAUGCCUGCG 1697

Qy        1700 CTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATGTACGACGCGTTATCAGAATTA 1759
               |: || |: | |||| |  : |||||| | ||    |:|:|| | ||  : :|||| ::|
Db        1698 CUUGACAUUAGGAAGAAGAUGGAAGAAACGGAAGUGAUGUACAAUGCACUUUCAGAGUUA 1757

Qy        1760 TCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAGTTCAAAGACATGTGCAAGGCT 1819
               :|  :  : | ||   |:|| || ::|||: : |     ::     | |:|:|| |  |:
Db        1758 UCGGUGUUAAGGGAGUCUGACAAAUUCGAUGUUGAUGUUUUUUCCCAGAUGUGCCAAUCU 1817

Qy        1820 TTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTTGCAGTGGCCGAGAATAGAAGC 1879
```

```
               ::  || |::   ||      ||||||    |: |: |: || |:       ||:   |||
Db        1818 UUGGAAGUUGACCCAAUGACGGCAGCGAAGGUUAUAGUCGCGGUCAUGAGCAAUGAGAGC 1877

Qy        1880 GGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAATGTGGCTAAGGCTCT------T 1933
               ||: : ||:|: || :::||    || || |||| |||:|: ||    ||: :      :
Db        1878 GGUCUGACUCUCACAUUUGAACGACCUACUGAGGCGAAUGUUGCGCUAGCUUUACAGGAU 1937

Qy        1934 AAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCGACATCCGAAGAGGTGAACGTA 1993
                ||   | ||| :| || |  |   :     ::    | | |   |  || |
Db        1938 CAAGAGAAGGCUUCAGAAGGUGCUUUGGUAGUUACCUCAAGAGAAGUUGAAGAACCGUCC 1997

Qy        1994 AATAAATTTTCTATTGCTGAGAAAGGAGATTGCCTGTGTGTGCAGAAAGTCATGGTTTG 2053
               |  ||   ::| |: ||      || |  |      |   |:   |   |  |:  :  |
Db        1998 AUGAAGGGUUCGAUGGCCAGAGGAGAGUUACAAUUAGCUGGUCUUGCUGGAGAUCAUCCG 2057

Qy        2054 ACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTCAACGATTTCCATAAGGCTTGC 2113
                 |    |  | :   || || ||||| : |||:|  :  |  | :: ||:| |||
Db        2058 GAGUCGUCCUAUUCUAAGAACGAGGAGAUAGAGUCUUUAGAGCAGUUUCAUAUGGCAACG 2117

Qy        2114 GTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTCTACACTGGCTCACTCAAAGTT 2173
               |  ||:    : |::   ||||| |:|   :|| ::|: :|||| ||  |  : ||||::
Db        2118 GCAGAUUCGUUAAUUCGUAAGCAGAUGAGCUCGAUUGUGUACACGGGUCCGAUUAAAGUU 2177

Qy        2174 CAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCGTTGTCCGCCACTGTATCAAAT 2233
               || ||||:||| |||: : : || ||  :|| ||| :|  : :| ||  | |: :| ||:
Db        2178 CAGCAAAUGAAAAACUUUAUCGAUAGCCUGGUAGCAUCACUAUCUGCUGCGGUGUCGAAU 2237

Qy        2234 CTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCTGATTCCAGGGAGAAAGTTGGT 2293
               |:   ||||   |: || ||:  ||  |    :||   :||  || |  | ||  ::||
Db        2238 CUCGUCAAGAUCCUCAAAGAUACAGCUGCUAUUGACCUUGAAACCCGUCAAAAGUUUGGA 2297

Qy        2294 GTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCTGCGGCCAAAGGTCATTCATGG 2353
               |: : |||:|:  | :  |  |||:|| :  :||||||  |||||||  |:||: ||:||
Db        2298 GUCUUGGAUGUUGCAUCUAGGAAGUGGUUAAUCAAACCAACGGCCAAGAGUCAUGCAUGG 2357

Qy        2354 GGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCACTTCTATCTTATGAAGGAGAT 2413
               || |::|:        ||  | ||||      :   || |:: :    :|:|| |   |
Db        2358 GGUGUUGUUGAAACCCACGCGAGGAAGUAUCAUGUGGCGCUUUUGGAAUAUGAUGAGCAG 2417

Qy        2414 AGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTATCATCTGATACAATGGTATAT 2473
                |  :||:|||       || :|||| || |: ||:|:    :|:||  |  : |: :|:
Db        2418 GGUGUGGUGACAUGCGAUGAUUGGAGAAGAGUAGCUGUCAGCUCUGAGUCUGUUGUUUAU 2477

Qy        2474 TCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATGAGAGACGGTGAACCCCACGAA 2533
               :| || |: || || |:|  || :|:| | | |    :  || |||| ||||| || |
Db        2478 UCCGACAUGGCGAAACUCAGAACUCUGCGCAGACUGCUUCGAAACGGAGAACCGCAUGUC 2537

Qy        2534 CCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGTTGTGGAAAGTACAAAGGAGAT 2593
                 :|  |||||| : |: |::|:||| || |: || || :|:|| ||   ||||| |  :
Db        2538 AGUAGCGCAAAGGUUGUUCUUGUGGACGGAGUUCCGGGCUGUGGGAAAACCAAAGAAAUU 2597

Qy        2594 TTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTTCCTGGAAAACAAGCTGCTGCT 2653
                ::   ||  :: |: ::||:|| ||: : |: :: |: ||:|| || ||||| || |
Db        2598 CUUUCCAGGGUUAAUUUUGAUGAAGAUCUAAUUUUAGUACCUGGGAAGCAAGCCGCGGAA 2657

Qy        2654 ATGATCAGAAGAAGGGCTAATTCATCTGGACTGATAAGAGCCACAATGGACAATGTGAGA 2713
               |:||:||||||| | || ||::| :| ||  : |:    ||||| | |||||| |: | |
Db        2658 AUGAUCAGAAGACGUGCGAAUUCCUCAGGGAUUAUUGUGGCCACGAAGGACAACGUUAAA 2717

Qy        2714 ACGGTAGATTCACTTCTAATGCATCCAAAACCGCGATCACA---------CAAGAGGCTT 2764
               || |: ||::|  :  : |:| |:          |  |||          ||||||| :
Db        2718 ACCGUUGAUUCUUUCAUGAUGAAUUUUGGGAAAAGCACACGCUGUCAGUUCAAGAGGUUA 2777

Qy        2765 TTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTTAACTTCCTGGTGCTTATCTCT 2824
               :: |::||:||||||::||:| :||| || ||::|:|::|| :: |: |:|   |: :|
Db        2778 UUCAUUGAUGAAGGGUUGAUGUUGCAUACUGGUUGUGUUAAUUUUCUUGUGGCGAUGUCA 2837

Qy        2825 GGTTGCGACATCGCATACATTTACGGAGATACACAGCAGATTCCTTTCATTAACAGAGTT 2884
                  :|||| |: |||:|  :::||||||| ||||||||||::|| : ||: || ||||::
Db        2838 UUGUGCGAAAUUGCAUAUGUUUACGGAGACACACAGCAGAUUCCAUACAUCAAUAGAGUU 2897

Qy        2885 CAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAAGTGGATGAAGTTGAGATGAGG 2944
                     ::||||:| |||   ||::::|  ||  :| |||: || || |: ||||   |
Db        2898 UCAGGAUUCCCGUACCCCGCCCAUUUUGCCAAAUUGGAAGUUGACGAGGUGGAGACACGC 2957

Qy        2945 AGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTCCTACAATCGAAGTACGAAGGA 3004
               || || || |:  | :| ||||  ||:|: |    ::  |:  |   ||  :| || ||
Db        2958 AGAACUACUCUCCGUUGUCCAGCCGAUGUCACACAUUAUCUGAACAGGAGAUAUGAGGGC 3017

Qy        3005 GCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCATCTGAGATGATAGGCGGTAAG 3064
                  |: |  | |||::|  | |:  ||   :| |: :|    ||||:| : |||||
Db        3018 UUUGUCAUGAGCACUUCUUCGGUUAAAAAGUCUGUUUCGCAGGAGAUGGUCGGCGGAGCC 3077

Qy        3065 GGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGGAAAATTGTAACTTTCACTCAGGCT 3124
               |  |:  : ||     : :| |||||  :  | || || |:  : ||::: || ||  |
Db        3078 GCCGUGAUCAAUCCGAUCUCAAAACCCUUGCAUGGCAAGAUCCUGACUUUUACCCAAUCG 3137

Qy        3125 GATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTGAACACCGTTCATGAGATCCAA 3184
               ||:|||   |   :       |  || :|:    |:|:  |||| |: ||:||  : |||
Db        3138 GAUAAAGAAGCUCUGCUUUCAAGAGGGUAUUCAGAUGUUCACACUGUGCAUGAAGUGCAA 3197

Qy        3185 GGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACGGCAACTCCACTGACTCTGATT 3244
               || || || :     ||:|: :| |: |: || :: ||  | || ||| :  |  : |::
Db        3198 GGCGAGACAUACUCUGAUGUUUCACUAGUUAGGUUAACCCCUACACCAGUCUCCAUCAUU 3257

Qy        3245 TCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGACACACAAAGAGCTTCAAATAT 3304
                |         ||| ||:|:: : |:|||  :| | || |||||        :||| :|
Db        3258 GCAGGAGACAGCCCACAUGUUUUGGUCGCAUUGUCAAGGCACACCUGUUCGCUCAAGUAC 3317

Qy        3305 TACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGTGATTTGTCTTCTTTAAGCTCC 3364
               :|||| |: |:  : ||:||:::||:    |: |::|| ||: :        : |||:|
Db        3318 UACACUGUUGUUAUGGAUCCUUUAGUUAGUAUCAUUAGAGAUCUAGAGAAACUUAGCUCG 3377

Qy        3365 TTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGATAGCAATTACAGATGGATGCA 3424
               : | : ::||| |:|:|:| ||: || ||||| |    |:|||||::|||||: ||  |
Db        3378 UACUUGUUAGAUAUGUAUAAGGUCGAUGCAGGAACACAAUAGCAAUUACAGAUUGACUCG 3437

Qy        3425 GTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAATCAGGAGACTTTCCAGATCTA 3484
               |:|::||||||:   ||:|: :::|: ||| | || ||  | || ||  :: | ||: :
Db        3438 GUGUUCAAAGGUUCCAAUCUUUUUGUUGCAGCGCCAAAGACUGGUGAUAUUUCUGAUAUG 3497

Qy        3485 CAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACTATACTTAACAAGTATGATGCT 3544
               |||:: :| :| ||:   :| |:||| || || || || |:  : || || : :||:||:
Db        3498 CAGUUUUACUAUGAUAAGUGUCUCCCAGGCAACAGCACCAUGAUGAAUAAUUUUGAUGCU 3557

Qy        3545 GTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAGGATTGTGTTCTTGATTTTTCC 3604
               |::||||:||||::   :|| | :    : ||:|: || ||::|  :  : ||: : :|
Db        3558 GUUACCAUGAGGUUGACUGACAUUUCAUUGAAUGUCAAAGAUUGCAUAUUGGAUAUGUCU 3617

Qy        3605 AAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTAGAGCCAGTTTTGCGTACCGCG 3664
               ||   : :: |   ||| |||||    |    |   |:|   ||  :  : || || |||
Db        3618 AAGUCUGUUGCUGCGCCUAAGGAUCAAAUCAAACCACUAAUACCUAUGGUACGAACGGCG 3677

Qy        3665 GCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTGGTTGCAATGATTAAAAGAAAT 3724
               || |||  |||| |     | ||||:| : |||||: : |: || |:||::||||| ||
Db        3678 GCAGAAAUGCCACGCCAGACUGGACUAUUGGAAAAUUUAGUGGCGAUGAUUAAAAGGAAC 3737

Qy        3725 TTCAACGCACCAGACCTGACGGGGACGATTGACATTGAGAGCACCGCATCTGTTGTAGTA 3784
               :: |||||||| ||  :| | || |  |::|| |::|| |  || |||:|: : |: |:|
Db        3738 UUUAACGCACCCGAGUUGUCUGGCAUCAUUGAUAUUGAAAAUACUGCAUCUUUAGUUGUA 3797

Qy        3785 GATAAGTTTTTTGATAGCTATTTTATTAAAAAAGAAAAATACACAAAAAATATTGCTGGA 3844
               ||:|||::::::||:|| :|:::  ::||| || ||| | |  |||| || | :| :
Db        3798 GAUAAGUUUUUUGAUAGUUAUUUGCUUAAAGAAAAAAGAAAACCAAAUAAAAAUGUUUCU 3857

Qy        3845 GTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAACAGGAAAGAAGTACTATTGGAC 3904
                :| : |  |  || :|  : |  |||:||:: |||||   | || | |:|  | : | |
Db        3858 UUGUUCAGUAGAGAGUCUCUCAAUAGAUGGUUAGAAAAGCAGGAACAGGUAACAAUAGGC 3917

Qy        3905 GACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATCGATCAGTACAAGCACATGATC 3964
                |  : ||  | :   |::::  |||: :||| ||  : ||:|||:|||  ||||:||:
Db        3918 CAGCUCGCAGAUUUUGAUUUUGUAGAUUUGCCAGCAGUUGAUCAGUACAGACACAUGAUU 3977

Qy        3965 AAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAGAATGAATACCCTGCTCTGCAA 4024
               || || ||||| || || |||::||||  ::||:  || |  || :|||| ||: :|||
Db        3978 AAAGCACAACCCAAGCAAAAAUUGGACACUUCAAUCCAAACGGAGUACCCGGCUUUGCAG 4037
```

```
Qy          4025 ACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTGGCCGGTTTCT---CAGAGCTT 4081
                 || |::|: :||||::| ||  |||:||| |  |: :: | |   :: :     ||||::
Db          4038 ACGAUUGUGUACCAUUCAAAAAAGAUCAAUGCAAUAUUUGGCCCGUUGUUUAGUGAGCUU 4097

Qy          4082 ACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTTCTTTTCTTTACTAGGAAAACT 4141
                 || |||    : |: ||     ::||::| |  |  ::: : :: :: || || || ||
Db          4098 ACUAGGCAAUUACUGGACAGUGUUGAUUCGAGCAGAUUUUUGUUUUUCACAAGAAAGACA 4157

Qy          4142 CCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCGCACGTTCCTATGGATGTGTTA 4201
                 ||||  ||||:: | || :: ::|   ||:|:||||   || |: || |:|||:|: ::
Db          4158 CCAGCGCAGAUUGAGGAUUUCUUCGGAGAUCUCGACAGUCAUGUGCCGAUGGAUGUCUUG 4217

Qy          4202 GAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAGTTTCATTGTGCTGTAGAGTAT 4261
                 || |:|||:|: :| || :| || || :| ||||| || :: || :|:|| |:||| :|
Db          4218 GAGCUGGAUAUAUCAAAAUACGACAAAUCUCAGAAUGAAUUCCACUGUGCAGUAGAAUAC 4277

Qy          4262 GAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCCGAAGTGTGGAAACAAGGGCAC 4321
                 || |: :||  ||||::|||: :  | || :: ::||  ||||: :||||||||||||||
Db          4278 GAGAUCUGGCGAAGAUUGGGUUUUGAAGACUUCUUGGGAGAAGUUUGGAAACAAGGGCAU 4337

Qy          4322 AGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAGACATGTCTGTGGTATCAAAGG 4381
                 || || || ||  : |||||::| |  || || |: || || :|  : :||:|:|||||
Db          4338 AGAAAGACCACCCUCAAGGAUUAUACCGCAGGUAUAAAAACUUGCAUCUGGUAUCAAAGA 4397

Qy          4382 AAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTTATAATAGCAGCTTGCTTGGGT 4441
                 || ||||| || |: || ||  ::||: || ||:|: |: |: || || :| ::||
Db          4398 AAGAGCGGGGACGUCACGACGUUCAUUGGAAACACUGUGAUCAUUGCUGCAUGUUUGGCC 4457

Qy          4442 TCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTTTGTGGAGACGATTCCGTTTTG 4501
                 :| |:| : ||||:||| ||  : |: ||||| || ::::| || |||||:    :  :|
Db          4458 UCGAUGCUUCCGAUGGAGAAAAUAAUCAAAGGAGCCUUUUGCGGUGACGAUAGUCUGCUG 4517

Qy          4502 TATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCATGTGCTAATCTCATGTGGAAT 4561
                 :| :::||||||||::  || :: || ||  : ||    :  || ||:|: |:|:||||:
Db          4518 UACUUUCCAAAGGGUUGUGAGUUUCCGGAUGUGCAACACUCCGCGAAUCUUAUGUGGAAU 4577

Qy          4562 TTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTTTGTGGTAGATACATCATACAC 4621
                 :::|| || ||||:|: :| |||   |:| || :||::::| || |||:|  : |:|||
Db          4578 UUUGAAGCAAAACUGUUUAAAAAACAGUAUGGAUACUUUUGCGGAAGAUAUGUAAUACAU 4637

Qy          4622 CATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAGTTGATCTCCAAACTTGGGGCA 4681
                 || || |  |||   |: |:|:|::| ||:||  : |||::||:|:| ||||::|| ||
Db          4638 CACGACAGAGGAUGCAUUGUGUAUUACGAUCCCCUAAAGUUGAUCUCGAAACUUGGUGCU 4697

Qy          4682 AAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGGGTGTCTTTGTGCGATGTTGCT 4741
                 ||||| |:||||||::  || |||:: || |||:: ||   |:|: : :| ||:|::||:
Db          4698 AAACACAUCAAGGAUUGGGAACACUUGGAGGAGUUCAGAAGGUCUCUUUGUGAUGUUGCU 4757

Qy          4742 TGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTGAACGCAGCTATCAAGGAGGTT 4801
                   ::|| :     || :|    :     :   | ||| :| |||  ||: :   |||||::
Db          4758 GUUUCGUUGAACAAUUGUGCGUA---UUACACACAGUUGGACGACGCUGUAUGGGAGGUU 4814

Qy          4802 CATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGTGTTAACAAATTTTTGTGTGAT 4861
                 ||:|| |||||   :   ||::||:::| :: :||  |: :    || : :::|: :||:
Db          4815 CAUAAGACCGCCCCUCCAGGUUCGUUUGUUUAUAAAAGUCUGGUGAAGUAUUUGUCUGAU 4874

Qy          4862 AAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAGTCTCAGAGATACTGTCAAAAT 4921
                 ||| :: : :::|||| :::|::: :| |:|||: :   : : | ||  |  |: || |:
Db          4875 AAAGUUCUUUUUAGAAGUUUGUUUAUAGAUGGCUCUAGUUGUUAAAGGAAAAGUGAAUAU 4934

Qy          4922 TAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACTTCCGGCATTCATGACTAAGGT 4981
                  |  |||:: |: || |:  | |||  |||  |||:  : ||| |  :  : ||    |:
Db          4935 CAAUGAGUUUAUCGACCUGACAAAAAUGGAGAAGAUCUUACCGUCGAUGUUUACCCCUGU 4994

Qy          4982 CAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGCTGTTAAGAATGATAGTCTTTC 5041
                  |||||:|::|     :| |  |: || || |: |:|| :  : ||||:||     : :|
Db          4995 AAAGAGUGUUAUGUGUUCCAAAGUUGAUAAAAUAAUGGUUCAUGAGAAUGAGUCAUUGUC 5054

Qy          5042 TGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAAAGGGTATGTGTGCTTAGCTGA 5101
                  || |:  |  : |::||||| |::||| :  :: | |  || :| |: :| ::||| |
Db          5055 AGAGGUGAACCUUCUUAAAGGAGUUAAGCUUAUUGAUAGUGGAUACGUCUGUUUAGCCGG 5114

Qy          5102 TTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTGCCGTGGTGGTGTCAGTGTTTG 5161
                 :::||: |:  | || |||:||||  : || || || :|| | || ||:|: || |: :|
Db          5115 UUUGGUCGUCACGGGCGAGUGGAACUUGCCUGACAAUUGCAGAGGAGGUGUGAGCGUGUG 5174

Qy          5162 TATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAACGCTGGGTGCGTATCACGCCCC 5221
                 : : |: || || || |:| ||||     | || || || |: ||  | :|  || |  |
Db          5175 UCUGGUGGACAAAAGGAUGGAAAGAGCCGACGAGGCCACUCUCGGAUCUUACUACACAGC 5234

Qy          5222 TGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAATTATTCAATAACATCCGAGGA 5281
                  ||:   || || |  :::   :: ||| :  : || ||::|: | |:|||  || ||||
Db          5235 AGCUGCAAAGAAAAGAUUUCAGUUCAAGGUCGUUCCCAAUUAUGCUAUAACCACCCAGGA 5294

Qy          5282 TGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAAAGGAGTGGCTATGGAAGAAGG 5341
                  ||   |||  ||   :||||||: ::||: ||:|: | |   |:|   |:|  ||  ||
Db          5295 CGCGAUGAAAAACGUCUGGCAAGUUUUAGUUAAUAUUAGAAAUGUGAAGAUGUCAGCGGG 5354

Qy          5342 ATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGTAGTACATAAAAATAATGTAAG 5401
                  : |:|:||  : :|: :||||:: |: :|  : :|: : |:  |:| |||:||: :||
Db          5355 UUUCUGUCCGCUUUCUCUGGAGUUUGUGUCGGUGUGUAUUGUUUAUAGAAAUAAUAUAAA 5414

Qy          5402 AAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGGCTCGCCAATTGAACTCACTGA 5461
                 |  |||:::||| ||    |::   |  |:|| ||||||   ||| |: ||||: || ||
Db          5415 AUUAGGUUUGAGAGAGAAGAUUACAAACGUGAGAGACGGAGGGCCCAUGGAACUUACAGA 5474

Qy          5462 AAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGCTGTGAAACTCGAAAAGGTTCC 5521
                 | | |: |::|| |||::| :||| || |: || |:| |   : |  |: | |||| ::|
Db          5475 AGAAGUCGUUGAUGAGUUCAUGGAAGAUGUCCCUAUGUCGAUCAGGCUUGCAAAGUUUCG 5534

Qy          5522 GG------------AAAACAAAAAAGAAATGGTAGGTAATAATGTTAATAAT-------- 5561
                               |||| |   | |       ||| || ||:  :| :||:
Db          5535 AUCUCGAACCGGAAAAAAGAGUGAUGUCCGCAAAGGGAAAAAUAGUAGUAAUGAUCGGUC 5594

Qy          5562 -------AAGAAAATAAATAACAGTGGTAAGAAGGGTTTTAAAATTGAGGAAATTGAGGA 5614
                        || || |   |:|  | :| :||| |   :     ||:       |   || |
Db          5595 AGUGCCGAACAAGAACUAUAGAAAUGUUAAGGAUUUUGGAGGAAUGAGUUUUAAAAAGAA 5654

Qy          5615 TAATGTAAGTGATGACGAGT---------CTATCGCGTCATCGAGTACGTTTTAATCAAT 5665
                 :||: :||  ||:|| || :         |: :|||   |:||  : ||::::|   ||:
Db          5655 UAAUUUAAUCGAUGAUGAUUCGGAGGCUACUGUCGCCGAAUCGGAUUCGUUUUA---AAU 5711

Qy          5666 ATGCCTTATACAATCAACTCTCCGAGCCAATTTGTTTACTTATCTTCCGCTTACGCAGAT 5725
                 |:| |::| |  |:||   |:||    || :: |: : |:: :| :| ||  :  || ||
Db          5712 AUGUCUUACAGUAUCACUACUCCAUCUCAGUUCGUGUUCUUGUCAUCAGCGUGGGCCGAC 5771

Qy          5726 CCTGTGCAGCTGATCAATCTGTGTACAAATGCATTGGGTAACCAGTTTCAAACGCAACAA 5785
                 ||  :  || : |: ||: : :|:|| ||:|| :: || || |||:::||||| ||||||
Db          5772 CCAAUAGAGUUAAUUAAUUUAUGUACUAAUGCCUUAGGAAAUCAGUUUCAAACACAACAA 5831

Qy          5786 GCTAGGACAACAGTCCAACAGCAATTTGCGGATGCCTGGAAACCTGTGCCTAGTATGACA 5845
                 ||: | ||    |: |||   |||::    || |  :|||||||:   ||     : ||
Db          5832 GCUCGAACUGUCGUUCAAAGACAAUUCAGUGAGGUGUGGAAACCUUCACCACAAGUAACU 5891

Qy          5846 GTGAGATTTCCTGCATCGGATTTCTATGTGTATAGATATAATTCGACGCTTGATCCGTTG 5905
                 |: || :: ||:|     || ::  | |:|:| || :| ||: ||    : || ||| :
Db          5892 GUUAGGUUCCCUGACAGUGACUUUAAGGUGUACAGGUACAAUGCGGUAUUAGACCCGCUA 5951

Qy          5906 ATCACGGCGTTATTAAATAGCTTTGATACTAGAAATAGAATAATAGAGGTTGATAATCAA 5965
                  :||| ||  : ::|  :   :: || ||:|||||:||||:||:||| |::|| ||:||
Db          5952 GUCACAGCACUGUUAGGUGCAUUCGACACUAGAAAUAGAAUAAUAGAAGUUGAAAAUCAG 6011

Qy          5966 CCCGCACCGAATACTACTGAAATCGTTAACGCGACTCAGAGGGTAGACGATGCTACTGTA 6025
                  |    || |  ||: | ||||   :  | || ||:|  || |:|||||| || || |:
Db          6012 GCGAACCCCACGACUGCCGAAACGUUAGAUGCUACUCGUAGAGUAGACGACGCAACGGUG 6071

Qy          6026 GCTATAAGGGCTTCAATCAATAATTTGGCTAATGAACTGGTTCGTGGAACTGGCATGTTC 6085
                 || |:||||    | |: ||:||:::       ||| :| :  | |||||  ||    :
Db          6072 GCCAUAAGGAGCGCGAUAAAUAAUUUAAUAGUAGAAUUGAUCAGAGGAACCGGAUCUUAU 6131

Qy          6086 AATCAAGCAGGCTTTGAGACTGCTAGTGGACTTGTCTGGACCACAACTCCGGCTACTTAG 6145
                 ||:|        :: ||||   |:  :||  : |: :||||| |   :|| || || :||
Db          6132 AAUCGGAGCUCUUUCGAGAGCUCUUCUGGUUUGGUUUGGACCUCUGGUCCUGCAACCUAG 6191

Qy          6146 CTATT 6150
```

```
             | |::
Db      6192 CAAUU 6196


RESULT 14
US-09-962-527-4
; Sequence 4, Application US/09962527
; Patent No. 6740740
;  GENERAL INFORMATION:
;       APPLICANT: GARGER, STEPHEN
;                  HOLTZ, R. BARRY
;                  McCULLOCH, MICHAEL
;                  TURPEN, THOMAS
;       TITLE OF INVENTION: A PROCESS FOR ISOLATING AND
;                           PURIFYING VIRUSES SOLUBLE PROTEINS AND PEPTIDES
;                           FROM PLANT SOURCES
;       NUMBER OF SEQUENCES: 5
;       CORRESPONDENCE ADDRESS:
;            ADDRESSEE: Howrey & Simon
;            STREET: 1299 Pennsylvania Avenue N.W.
;            CITY: Washington
;            STATE: DC
;            COUNTRY: USA
;            ZIP: 20004
;       COMPUTER READABLE FORM:
;            MEDIUM TYPE: Diskette
;            COMPUTER: IBM Compatible
;            OPERATING SYSTEM: DOS
;            SOFTWARE: FastSEQ for Windows Version 2.0
;       CURRENT APPLICATION DATA:
;            APPLICATION NUMBER: US/09/962,527
;            FILING DATE: 24-Sep-2001
;            CLASSIFICATION: <Unknown>
;       PRIOR APPLICATION DATA:
;            APPLICATION NUMBER: 09/037,751
;            FILING DATE: 10-march-1998
;       ATTORNEY/AGENT INFORMATION:
;            NAME: Halluin, Albert P
;            REGISTRATION NUMBER: 25,277
;            REFERENCE/DOCKET NUMBER: 00801.0140.999
;       TELECOMMUNICATION INFORMATION:
;            TELEPHONE: 650-463-8109
;            TELEFAX: 650-463-8400
;            TELEX: <Unknown>
;  INFORMATION FOR SEQ ID NO: 4:
;       SEQUENCE CHARACTERISTICS:
;            LENGTH: 6475 base pairs
;            TYPE: nucleic acid
;            STRANDEDNESS: single
;            TOPOLOGY: unknown
;       MOLECULE TYPE: Genomic RNA
;       SEQUENCE DESCRIPTION: SEQ ID NO: 4:
US-09-962-527-4

  Query Match             38.6%;  Score 2452.2;  DB 4;  Length 6475;
  Best Local Similarity   44.8%;  Pred. No. 0;
  Matches 2770;  Conservative 1147;  Mismatches 2208;  Indels   60;  Gaps    8;

Qy        20 ACAACAACAATTAAAACAAAAACAACATATTACAAACAACAAACAACAACAATGGCACAC 79
             || |  |  |  |||  | |||||||:   |   || |   ||||  ||||:|||| ||
Db        18 ACCAACAACAACAAACAACAAACAACAUUACAAUUACUAUUUACAAUUACAAUGGCAUAC 77

Qy        80 ATACAATCTATAATTAGCAACGCCCTTCTTGAAAGCGTGAGTGGTAAAAACACTCTCGTT 139
             | |||  |    |  |     ||  : |: || |  |:  | || ||| || |  : |:
Db        78 ACACAGACAGCUACCACAUCAGCUUUGCUGGACACUGUCCGAGGAAACAACUCCUUGGUC 137

Qy       140 AATGACCTTGCAAGAAGGCGCATGTACGATACGGCCGTGGAAGAATTTAACGCCCGCGAC 199
             ||:|| |: ||||   | ||  : :|||| || || |: ||||| :::||||| || |||
Db       138 AAUGAUCUAGCAAAGCGUCGUCUUUACGACACAGCGGUUGAAGAGUUUAACGCUCGUGAC 197

Qy       200 CGTAGACCAAAGGTCAACTTTTCCAAAACTATTAGCGAAGAGCAAACGCTTCTAGTCTCC 259
             || || || ||||: |||::::| |||   |: ||||| ||||| ||||:: : |   ||
Db       198 CGCAGGCCCAAGGUGAACUUUUCAAAAGUAAUAAGCGAGGAGCAGACGCUUAUUGCUACC 257

Qy       260 AACGCGTACCCGGAGTTCCAGATTACCTTTTATAATACTCAAAATGCCGTACACAGTTTG 319
                |||:| || || ::||| |::|| ::::|:|| || |||||:||||: ||     :
Db       258 CGGGCGUAUCCAGAAUUCCAAAUUACAUUUUAUAACACGCAAAAUGCCGUGCAUUCGCUU 317

Qy       320 GCTGGAGGTTTGAGAGCATTAGAATTGGAATATCTGATGCTACAAGTTCCCTATGGATCG 379
             || || || ::| || | ::|||| :||||:|:|:||:| : ||| ::|||:| |||:|
Db       318 GCAGGUGGAUUGCGAUCUUUAGAACUGGAAUAUCUGAUGAUGCAAAUUCCCUACGGAUCA 377

Qy       380 CCGACATATGATATAGGTGGGAACTTTGCAGCACATTTGTTCAAAGGCAGGGATTACGTG 439
               ||| :|:|| |:||| |||| :::||| | ||: :|::||| ||  | |  :| |:
Db       378 UUGACUUAUGACAUAGGCGGGAAUUUUGCAUCGCAUCUGUUCAAGGGACGAGCAUAUGUA 437

Qy       440 CATTGCTGTATGCCCAATCTGGACATACGAGATATAATGAGGCACGAAGGACAAAAGGAC 499
             || :||:| |:|||||| |:|||| : ||||| |: |:| |||||||||| || || |||
Db       438 CACUGCUGCAUGCCCAACCUGGACGUUCGAGACAUCAUGCGGCACGAAGGCCAGAAAGAC 497

Qy       500 TCAATTGAGATGTATTTGTCCAGATTGTCTCGTTCTAACAAGGTAATTCCTGAGTTTCAA 559
                |::||  : :|  : :| || :      |       ||   | : ||  | :: |||
Db       498 AGUAUUGAACUAUACCUUUCUAGGCUAGAGAGAGGGGGGAAAACAGUCCCCAACUUCCAA 557

Qy       560 AGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAAGTCTGCTGCTCTAAAACTTTT 619
             | ||| || ::: |||| :| ||||||  :||  | || |    |:|    || ||:::
Db       558 AAGGAAGCAUUUGACAGAUACGCAGAAAUUCCUGAAGACGCUGUCUGUCACAAUACUUUC 617

Qy       620 CAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGAAGATACGCTGTTGCTCTGCAC 679
             |||      |||   || |||    || |    || |||   :| ||  ::|| |: |||
Db       618 CAGACAAUGCGACAUCAGCCGAUGCAGCAAUCAGGCAGAGUGUAUGCCAUUGCGCUACAC 677

Qy       680 AGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCGTTAATATCTAAGAATATACAT 739
             ||  : :|:|| |: || |   |:|||:: || || ||  :  :    || ||: : ||:
Db       678 AGCAUAUAUGACAUACCAGCCGAUGAGUUCGGGGCGGCACUCUUGAGGAAAAAUGUCCAU 737

Qy       740 GTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTACTAGACCAGACGGAGGTTACG 799
                :| :|:|| ||:: |    ::  | ||     :  : |: ||  |  |  | |: |
Db       738 ACGUGCUAUGCCGCUUUCCACUUCUCUGAGAACCUGCUUCUUGAAGAUUCAUACGUCAAU 797

Qy       800 CTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGATGATGTTTCTTTTTTCTTTGCT 859
              :  | |||||:   |||   :::     | || || ||  |  :  | ::::  :::||
Db       798 UUGGACGAAAUCAACGCGUGUUUUUCGCGCGAUGGAGACAAGUUGACCUUUUCUUUUGCA 857

Qy       860 GATGAAAGTACTTTAAATTATAGTCATAAATACAAAAATATCTTGCATTATGTAGTTAAA 919
                || ||:||: : ||::|: |:||:|  :|    ||:|:  :  | :|:|:    |||
Db       858 UCAGAGAGUACUCUUAAUUAUUGUCAUAGUUAUUCUAAUAUUCUUAAGUAUGUGUGCAAA 917

Qy       920 TCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAGGAATTTTTAGTCACTAGGGTT 979
              |::||:: || || :|:| :|||   |:::|| : ||||| :::::||:||| || |::
Db       918 ACUUACUUCCCGGCCUCUAAUAGAGAGGUUUACAUGAAGGAGUUUUUAGUCACCAGAGUU 977

Qy       980 AATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTATATTCTGTACAAGAGTGTTAGA 1039
             ||:|| :||::::|:|| ::: | | | :|||:|| : : :: :|:||||   |:|:
Db       978 AAUACCUGGUUUUGUAAGUUUUCUAGAAUAGAUACUUUUCUUUUGUACAAAGGUGUGGCC 1037

Qy      1040 CAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATGGAAGACGCCTTTGCTTACAAG 1099
             ||   | |    ||:||:|| |||:: :|:   || |:|||||||| :    ::||||
Db      1038 CAUAAAAGUGUAGAUAGUGAGCAGUUUUAUACUGCAAUGGAAGACGCAUGGCAUUACAAA 1097

Qy      1100 AAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTTAGAGACACGGCTTCGGTTAAC 1159
             || ||  : || |:|: |||||  || |||    :| ::   ||  |  |  :| |: ||
Db      1098 AAGACUCUUGCAAUGUGCAACAGCGAGAGAAUCCUCCUUGAGGAUUCAUCAUCAGUCAAU 1157

Qy      1160 TTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCGCTGTTTGAGGGTTCTATTACC 1219
             :  :||:: || || |:|| ||| |:||: |: |:|||  : :: ||   ::|: :
Db      1158 UACUGGUUUCCCAAAAUGAGGGAUAUGGUCAUCGUACCAUUAUUCGACAUUUCUUUGGAG 1217

Qy      1220 AGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGTGACTTCGTTTACACAGTGCTT 1279
             |  |  |||| |||  | |  || |:| : |:       || ::||: :  ||||:||::
Db      1218 ACUAGUAAGAGGACGCGCAAGGAAGUCUUAGUGUCCAAGGAUUUCGUGUUUACAGUGCUU 1277

Qy      1280 AATCATATCAGAACATATCAAGCCAAAGCGTTAACTTACCAGAACGTATTATCTTTCGTG 1339
             || || |:  |||||:| || || |||||   : || :||   || |: :: :| :: |:
Db      1278 AACCACAUUCGAACAUACCAGGCGAAAGCUCUUACAUACGCAAAUGUUUUGUCCUUUGUC 1337
```

```
Qy   1340 GAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACTGCTAGGTCTGAATGGGATGTA 1399
          || :| |:  ||:|  | |: |: |: || ||:|: || || |||:| |||:||||:|:
Db   1338 GAAUCGAUUCGAUCGAGGGUAAUCAUUAACGGUGUGACAGCGAGGUCCGAAUGGGAUGUG 1397

Qy   1400 GATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTCTTGCAGACTAAGCTGGCTGCG 1459
          || ||| |  :  : ||| ||::|:| |:|| :: : | :||| ||:||||: || |
Db   1398 GACAAAUCUUUGUUACAAUCCUUGUCCAUGACGUUUUACCUGCAUACUAAGCUUGCCGUU 1457

Qy   1460 CTTCAAGACGATATAGTAATGGGAAAGTTTCGGTGCTTGGATAAGACCACTTCTGAACTT 1519
          |:  | || ||  :| : |:  | |||::: |   |      || ||    :   | | :
Db   1458 CUAAAGGAUGACUUACUGAUUAGCAAGUUUAGUCUCGGUUCGAAAACGGUGUGCCAGCAU 1517

Qy   1520 ATTTGGGATGAGGTGGGCAAATTTTTTGGAAACGTTTTCCCCACTATCAAAGAGAGATTG 1579
           : ||||:|||| :          :::||  ||||  :: ||| |  : ||||||||  :
Db   1518 GUGUGGGAUGAGAUUUCGCUGGCGUUUGGGAACGCAUUUCCCUCCGUGAAAGAGAGGCUC 1577

Qy   1580 GTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTGAAGATCAAGATCCCAGATCTG 1639
           :|| ||||||| :: :     |:    |   | ||  :  |||:|| | : || ||:|:
Db   1578 UUGAACAGGAAACUUAUCAGAGUGGCAGGCGACGCAUUAGAGAUCAGGGUGCCUGAUCUA 1637

Qy   1640 TATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACCAAGTCTGAGGAGTTACCGCAT 1699
          :|:|: || :   | ||||| :: |:  |:|| :|||     :|:| |||  : ||
Db   1638 UAUGUGACCUUCCACGACAGAUUAGUGACUGAGUACAAGGCCUCUGUGGACAUGCCUGCG 1697

Qy   1700 CTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATGTACGACGCGTTATCAGAATTA 1759
          |: || |: | |||| |  : |||||| | ||    |:|:|| | ||  : :|||| ::|
Db   1698 CUUGACAUUAGGAAGAAGAUGGAAGAAACGGAAGUGAUGUACAAUGCACUUUCAGAGUUA 1757

Qy   1760 TCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAGTTCAAAGACATGTGCAAGGCT 1819
          :|  :  : | ||   |:|| || ::|||: : |     ::     | |:|:|| |  |:
Db   1758 UCGGUGUUAAGGGAGUCUGACAAAUUCGAUGUUGAUGUUUUUUCCCAGAUGUGCCAAUCU 1817

Qy   1820 TTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTTGCAGTGGCCGAGAATAGAAGC 1879
          :: || |::   ||      ||||||    |: |: |: || |:        ||:   |||
Db   1818 UUGGAAGUUGACCCAAUGACGGCAGCGAAGGUUAUAGUCGCGGUCAUGAGCAAUGAGAGC 1877

Qy   1880 GGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAATGTGGCTAAGGCTCT------T 1933
          ||: : ||:|: || :::||    || |||| |||:|: ||    ||: :      :
Db   1878 GGUCUGACUCUCACAUUUGAACGACCUACUGAGGCGAAUGUUGCGCUAGCUUUACAGGAU 1937

Qy   1934 AAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCGACATCCGAAGAGGTGAACGTA 1993
           ||   | ||| :| ||  |  |   :     ::    | |   |  ||  |
Db   1938 CAAGAGAAGGCUUCAGAAGGUGCUUUGGUAGUUACCUCAAGAGAAGUUGAAGAACCGUCC 1997

Qy   1994 AATAAATTTTCTATTGCTGAGAAAGGAGATTGCCTGTGTGTGCAGAAAGTCATGGTTTG 2053
          |  ||   ::| |: ||      || |  |      |   |:   |   |  |:  :  |
Db   1998 AUGAAGGGUUCGAUGGCCAGAGGAGAGUUACAAUUAGCUGGUCUUGCUGGAGAUCAUCCG 2057

Qy   2054 ACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTCAACGATTTCCATAAGGCTTGC 2113
            |    |  | :   || ||||| : ||:|   :  |  | :: ||:| |||
Db   2058 GAGUCGUCCUAUUCUAAGAACGAGGAGAUAGAGUCUUUAGAGCAGUUUCAUAUGGCAACG 2117

Qy   2114 GTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTCTACACTGGCTCACTCAAAGTT 2173
          |  ||:    : |::   ||||| |:|   :|| ::|: :|||| ||  |  : ||||::
Db   2118 GCAGAUUCGUUAAUUCGUAAGCAGAUGAGCUCGAUUGUGUACACGGGUCCGAUUAAAGUU 2177

Qy   2174 CAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCGTTGTCCGCCACTGTATCAAAT 2233
          || ||||:||| |||: : : || ||  :|| |||:|   : :| ||  | |: :| ||:
Db   2178 CAGCAAAUGAAAAACUUUAUCGAUAGCCUGGUAGCAUCACUAUCUGCUGCGGUGUCGAAU 2237

Qy   2234 CTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCTGATTCCAGGGAGAAAGTTGGT 2293
          |:   ||||   |: || ||:  ||  |    :||   :||  || |  | ||  ::||
Db   2238 CUCGUCAAGAUCCUCAAAGAUACAGCUGCUAUUGACCUUGAAACCCGUCAAAAGUUUGGA 2297

Qy   2294 GTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCTGCGGCCAAAGGTCATTCATGG 2353
          |: : |||:|:  | :  |  |||:|| : :||||||  ||||||||  |:||: ||:||
Db   2298 GUCUUGGAUGUUGCAUCUAGGAAGUGGUUAAUCAAACCAACGGCCAAGAGUCAUGCAUGG 2357

Qy   2354 GGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCACTTCTATCTTATGAAGGAGAT 2413
          || |::|:        ||  | ||||      :   || |:: :    :|:|| |   |
Db   2358 GGUGUUGUUGAAACCCACGCGAGGAAGUAUCAUGUGGCGCUUUUGGAAUAUGAUGAGCAG 2417

Qy   2414 AGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTATCATCTGATACAATGGTATAT 2473
           |  :||:||       || :|||| || |: ||:|:    :|:||  |    : |: :|:
Db   2418 GGUGUGGUGACAUGCGAUGAUUGGAGAAGAGUAGCUGUCAGCUCUGAGUCUGUUGUUUAU 2477

Qy   2474 TCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATGAGAGACGGTGAACCCCACGAA 2533
          :| || |: || || |:|  || :|:|  | |    :  || |||| ||||| ||| || |
Db   2478 UCCGACAUGGCGAAACUCAGAACUCUGCGCAGACUGCUUCGAAACGGAGAACCGCAUGUC 2537

Qy   2534 CCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGTTGTGGAAAGTACAAAGGAGAT 2593
            :|  |||||| : |: |:|:|||| || |: || || :|:|| ||   ||||| |  :
Db   2538 AGUAGCGCAAAGGUUGUUCUUGUGGACGGAGUUCCGGGCUGUGGAAAACCAAAGAAAUU 2597

Qy   2594 TTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTTCCTGGAAAACAAGCTGCTGCT 2653
           ::   ||  :: |: ::||:|| ||: : |: :: |: ||:|| || ||||| || |
Db   2598 CUUUCCAGGGUUAAUUUUGAUGAAGAUCUAAUUUUAGUACCUGGGAAGCAAGCCGCGGAA 2657

Qy   2654 ATGATCAGAAGAAGGGCTAATTCATCTGGACTGATAAGAGCCACAATGGACAATGTGAGA 2713
          |:||:||||||| | || ||::| :| ||  : |:    ||||| | |||||| |: | |
Db   2658 AUGAUCAGAAGACGUGCGAAUUCCUCAGGGAUUAUUGUGGCCACGAAGGACAACGUUAAA 2717

Qy   2714 ACGGTAGATTCACTTCTAATGCATCCAAAACCGCGATCACA---------CAAGAGGCTT 2764
          || |: ||::|  :  : |:| |:             |  |||          ||||||| :
Db   2718 ACCGUUGAUUCUUUCAUGAUGAAUUUUGGGAAAAGCACACGCUGUCAGUUCAAGAGGUUA 2777

Qy   2765 TTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTTAACTTCCTGGTGCTTATCTCT 2824
          :: |::||:|||||::||:| :||| || ||::|:|::|| :: |: |:   |: :|
Db   2778 UUCAUUGAUGAAGGGUUGAUGUUGCAUACUGGUUGUGUUAAUUUUCUUGUGGCGAUGUCA 2837

Qy   2825 GGTTGCGACATCGCATACATTTACGGAGATACACAGCAGATTCCTTTCATTAACAGAGTT 2884
             :|||| |: ||:|   :::||||||| |||||||||::||  : |: || ||||::
Db   2838 UUGUGCGAAAUUGCAUAUGUUUACGGAGACACACAGCAGAUUCCAUACAUCAAUAGAGUU 2897

Qy   2885 CAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAAGTGGATGAAGTTGAGATGAGG 2944
                ::||||:| |||   ||::::|  ||  :| |||: || || |: ||||   |
Db   2898 UCAGGAUUCCCGUACCCCGCCCAUUUUGCCAAAUUGGAAGUUGACGAGGUGGAGACACGC 2957

Qy   2945 AGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTCCTACAATCGAAGTACGAAGGA 3004
          || || || |:  | :| ||||  ||:|:|    ::  |:   ||   :| || ||
Db   2958 AGAACUACUCUCCGUUGUCCAGCCGAUGUCACACAUUAUCUGAACAGGAGAUAUGAGGGC 3017

Qy   3005 GCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCATCTGAGATGATAGGCGGTAAG 3064
             |: |  | |||::|  |:  ||   :| |: :|    ||||:| : |||||
Db   3018 UUUGUCAUGAGCACUUCUUCGGUUAAAAAGUCUGUUUCGCAGGAGAUGGUCGGCGGAGCC 3077

Qy   3065 GGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGGAAAATTGTAACTTTCACTCAGGCT 3124
          |  |:  : ||     : :| |||||  :  | || || |:  : ||::: || ||  |
Db   3078 GCCGUGAUCAAUCCGAUCUCAAAACCCUUGCAUGGCAAGAUCCUGACUUUUACCCAAUCG 3137

Qy   3125 GATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTGAACACCGTTCATGAGATCCAA 3184
          ||:|||   |   :        |  || :|:    |:|:  |||| |: ||:||  : |||
Db   3138 GAUAAAGAAGCUCUGCUUUCAAGAGGGUAUUCAGAUGUUCACACUGUGCAUGAAGUGCAA 3197

Qy   3185 GGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACGGCAACTCCACTGACTCTGATT 3244
          || || || :     ||:|: :| |: |: || :: ||  | || ||| :  |  : |::
Db   3198 GGCGAGACAUACUCUGAUGUUUCACUAGUUAGGUUAACCCCUACACCAGUCUCCAUCAUU 3257

Qy   3245 TCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGACACACAAAGAGCTTCAAATAT 3304
           |         ||| ||:|:: : |:|||  :| | || |||||         :||| :|
Db   3258 GCAGGAGACAGCCCACAUGUUUUGGUCGCAUUGUCAAGGCACACCUGUUCGCUCAAGUAC 3317

Qy   3305 TACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGTGATTTGTCTTCTTTAAGCTCC 3364
          :|||| |: |:  : ||:||:::||:    |: |::|| ||: :          : |||:|
Db   3318 UACACUGUUGUUAUGGAUCCUUUAGUUAGUAUCAUUAGAGAUCUAGAGAAACUUAGCUCG 3377

Qy   3365 TTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGATAGCAATTACAGATGGATGCA 3424
          : | : ::||| |:|:|:| ||: || |||||    |:||||::||||| : ||  |
Db   3378 UACUUGUUAGAUAUGUAUAAGGUCGAUGCAGGAACACAAUAGCAAUUACAGAUUGACUCG 3437

Qy   3425 GTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAATCAGGAGACTTTCCAGATCTA 3484
          |:|::||||||:   ||:|: :::|: ||| | || ||  | || ||  :: | ||: :
Db   3438 GUGUUCAAAGGUUCCAAUCUUUUUGUUGCAGCGCCAAAGACUGGUGAUAUUUCUGAUAUG 3497

Qy   3485 CAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACTATACTTAACAAGTATGATGCT 3544
          |||:: :| :| ||:   :| |:||| || || || |:  : || || : :||:||:
```

```
Db    3498 CAGUUUUACUAUGAUAAGUGUCUCCCAGGCAACAGCACCAUGAUGAAUAAUUUUGAUGCU 3557

Qy    3545 GTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAGGATTGTGTTCTTGATTTTTCC 3604
           |::||||:||||::   :|| | :    : ||:|: || ||::|  :  : ||: : :|
Db    3558 GUUACCAUGAGGUUGACUGACAUUUCAUUGAAUGUCAAAGAUUGCAUAUUGGAUAUGUCU 3617

Qy    3605 AAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTAGAGCCAGTTTTGCGTACCGCG 3664
           ||   : :: |   ||| |||||    |    |   |:|   ||  :  : || || |||
Db    3618 AAGUCUGUUGCUGCGCCUAAGGAUCAAAUCAAACCACUAAUACCUAUGGUACGAACGGCG 3677

Qy    3665 GCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTGGTTGCAATGATTAAAAGAAAT 3724
           || |||  |||| |     | ||||:| : |||||: : |: || |:||::||||| ||
Db    3678 GCAGAAAUGCCACGCCAGACUGGACUAUUGGAAAAUUUAGUGGCGAUGAUUAAAAGGAAC 3737

Qy    3725 TTCAACGCACCAGACCTGACGGGGACGATTGACATTGAGAGCACCGCATCTGTTGTAGTA 3784
           :: ||||||||| ||  :| | || |  |::|| |::|| |  || |||:|: : |: |:|
Db    3738 UUUAACGCACCCGAGUUGUCUGGCAUCAUUGAUAUUGAAAAUACUGCAUCUUUAGUUGUA 3797

Qy    3785 GATAAGTTTTTTGATAGCTATTTTATTAAAAAAGAAAAATACACAAAAAATATTGCTGGA 3844
           ||:|||::::::||:|| :|:::  ::||| || ||| | |  |||| || | :| :
Db    3798 GAUAAGUUUUUUGAUAGUUAUUUGCUUAAAGAAAAAAGAAAACCAAAUAAAAAUGUUUCU 3857

Qy    3845 GTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAACAGGAAAGAAGTACTATTGGAC 3904
            :| : |  |  || :|  : |  |||:||:: |||||   | || | |:|  | : | |
Db    3858 UUGUUCAGUAGAGAGUCUCUCAAUAGAUGGUUAGAAAAGCAGGAACAGGUAACAAUAGGC 3917

Qy    3905 GACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATCGATCAGTACAAGCACATGATC 3964
            |  : ||  | :   |::::  |||: :||| ||  : ||:|||:||| ||||:||:
Db    3918 CAGCUCGCAGAUUUUGAUUUUGUAGAUUUGCCAGCAGUUGAUCAGUACAGACACAUGAUU 3977

Qy    3965 AAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAGAATGAATACCCTGCTCTGCAA 4024
           || || |||||| || || |||::||||  ::|||: || |  || :|||| ||: :|||
Db    3978 AAAGCACAACCCAAGCAAAAAUUGGACACUUCAAUCCAAACGGAGUACCCGGCUUUGCAG 4037

Qy    4025 ACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTGGCCGGTTTCT---CAGAGCTT 4081
           || |::|: :||||::| ||  |||:||| |  |: :: | |   :: :     ||||::
Db    4038 ACGAUUGUGUACCAUUCAAAAAAGAUCAAUGCAAUAUUUGGCCCGUUGUUUAGUGAGCUU 4097

Qy    4082 ACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTTCTTTTCTTTACTAGGAAAACT 4141
           || |||    : |: ||     ::||::| |  |  ::: : :: :: || || || ||
Db    4098 ACUAGGCAAUUACUGGACAGUGUUGAUUCGAGCAGAUUUUUGUUUUUCACAAGAAAGACA 4157

Qy    4142 CCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCGCACGTTCCTATGGATGTGTTA 4201
           ||||  ||||:: | || :: ::|   ||:|:||||   || |: || |:|||:|: ::
Db    4158 CCAGCGCAGAUUGAGGAUUUCUUCGGAGAUCUCGACAGUCAUGUGCCGAUGGAUGUCUUG 4217

Qy    4202 GAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAGTTTCATTGTGCTGTAGAGTAT 4261
           || |:|||:|: :| || :| || || :| ||||| || :: || :|:|| |:||| :|
Db    4218 GAGCUGGAUAUAUCAAAAUACGACAAAUCUCAGAAUGAAUUCCACUGUGCAGUAGAAUAC 4277

Qy    4262 GAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCCGAAGTGTGGAAACAAGGGCAC 4321
           || |: :||  ||||::|||: :  | || :: ::||  ||||: :|||||||||||||
Db    4278 GAGAUCUGGCGAAGAUUGGGUUUUGAAGACUUCUUGGGAGAAGUUUGGAAACAAGGGCAU 4337

Qy    4322 AGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAGACATGTCTGTGGTATCAAAGG 4381
           || || || ||  : |||||::| |  || || |: || || :|  : :||:|:|||||
Db    4338 AGAAAGACCACCCUCAAGGAUUAUACCGCAGGUAUAAAAACUUGCAUCUGGUAUCAAAGA 4397

Qy    4382 AAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTTATAATAGCAGCTTGCTTGGGT 4441
           || ||||| || |: || || ::||: || || ||:|: |: |: || || :| ::||
Db    4398 AAGAGCGGGGACGUCACGACGUUCAUUGGAAACACUGUGAUCAUUGCUGCAUGUUUGGCC 4457

Qy    4442 TCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTTTGTGGAGACGATTCCGTTTTG 4501
           :| |:| : ||||:||| ||  : |: ||||| || ::::| || |||||:    :  :|
Db    4458 UCGAUGCUUCCGAUGGAGAAAAUAAUCAAAGGAGCCUUUUGCGGUGACGAUAGUCUGCUG 4517

Qy    4502 TATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCATGTGCTAATCTCATGTGGAAT 4561
           :| :::||||||||::  || :: || ||  : ||    :  || ||:|: |:|:||||:
Db    4518 UACUUUCCAAAGGGUUGUGAGUUUCCGGAUGUGCAACACUCCGCGAAUCUUAUGUGGAAU 4577

Qy    4562 TTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTTTGTGGTAGATACATCATACAC 4621
           :::|| || ||||:|: :| |||   |:| || :||::::| || |||:|  : |:|||
Db    4578 UUUGAAGCAAAACUGUUUAAAAAACAGUAUGGAUACUUUUGCGGAAGAUAUGUAAUACAU 4637

Qy    4622 CATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAGTTGATCTCCAAACTTGGGGCA 4681
           || || |  |||   |: |:|:|::| ||:||  : |||::||:|:| ||||::|| ||
Db    4638 CACGACAGAGGAUGCAUUGUGUAUUACGAUCCCCUAAAGUUGAUCUCGAAACUUGGUGCU 4697

Qy    4682 AAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGGGTGTCTTTGTGCGATGTTGCT 4741
           ||||| |:||||||::  ||  ||:: || |||:: ||   |:|: : :| ||:|::||:
Db    4698 AAACACAUCAAGGAUUGGGAACACUUGGAGGAGUUCAGAAGGUCUCUUUGUGAUGUUGCU 4757

Qy    4742 TGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTGAACGCAGCTATCAAGGAGGTT 4801
             ::|| :    || :|    :     :   | ||| :| |||  ||: :   |||||::
Db    4758 GUUUCGUUGAACAAUUGUGCGUA---UUACACACAGUUGGACGACGCUGUAUGGGAGGUU 4814

Qy    4802 CATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGTGTTAACAAATTTTTGTGTGAT 4861
           ||:|| |||||   :   ||::||:::| :: :||  |: :    || : :::|: :||:
Db    4815 CAUAAGACCGCCCCUCCAGGUUCGUUUGUUUAUAAAAGUCUGGUGAAGUAUUUGUCUGAU 4874

Qy    4862 AAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAGTCTCAGAGATACTGTCAAAAT 4921
           ||| :: : :::|||| :::|::: :| |:|||: :   : : | ||  |  |: || |:
Db    4875 AAAGUUCUUUUUAGAAGUUUGUUUAUAGAUGGCUCUAGUUGUUAAAGGAAAAGUGAAUAU 4934

Qy    4922 TAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACTTCCGGCATTCATGACTAAGGT 4981
            |  |||:: |: || |:  | |||  |||  |||:  : ||| |  :  : ||    |:
Db    4935 CAAUGAGUUUAUCGACCUGACAAAAAUGGAGAAGAUCUUACCGUCGAUGUUUACCCCUGU 4994

Qy    4982 CAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGCTGTTAAGAATGATAGTCTTTC 5041
            |||||:|::|     :| |  |: || || |: |:|| :  : ||||:||     : :|
Db    4995 AAAGAGUGUUAUGUGUUCCAAAGUUGAUAAAAUAAUGGUUCAUGAGAAUGAGUCAUUGUC 5054

Qy    5042 TGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAAAGGGTATGTGTGCTTAGCTGA 5101
            || |:  |  : |::||||| |::||| :  :: | |  || :| |: :| ::||| |
Db    5055 AGAGGUGAACCUUCUUAAAGGAGUUAAGCUUAUUGAUAGUGGAUACGUCUGUUUAGCCGG 5114

Qy    5102 TTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTGCCGTGGTGGTGTCAGTGTTTG 5161
           :::||: |:  | || |||:||||  : || || || :|| | || ||:|: || |: :|
Db    5115 UUUGGUCGUCACGGGCGAGUGGAACUUGCCUGACAAUUGCAGAGGAGGUGUGAGCGUGUG 5174

Qy    5162 TATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAACGCTGGGTGCGTATCACGCCCC 5221
           : : |: || || || |:| ||||     | || || || |: ||  | :|  || |  |
Db    5175 UCUGGUGGACAAAAGGAUGGAAAGAGCCGACGAGGCCACUCUCGGAUCUUACUACACAGC 5234

Qy    5222 TGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAATTATTCAATAACATCCGAGGA 5281
            ||:   || || |  :::   :: ||| :  : || ||::|: | |:|||  || ||||
Db    5235 AGCUGCAAAGAAAAGAUUUCAGUUCAAGGUCGUUCCCAAUUAUGCUAUAACCACCCAGGA 5294

Qy    5282 TGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAAAGGAGTGGCTATGGAAGAAGG 5341
            ||   |||  ||   :||||||: ::||: ||:|: | |   |:|   |:|  ||  ||
Db    5295 CGCGAUGAAAAACGUCUGGCAAGUUUUAGUUAAUAUUAGAAAUGUGAAGAUGUCAGCGGG 5354

Qy    5342 ATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGTAGTACATAAAAATAATGTAAG 5401
            : |:|:||  : :|: :||||:: |: :|  : :|: : |:  |:| |||:||: :||
Db    5355 UUUCUGUCCGCUUUCUCUGGAGUUUGUGUCGGUGUGUAUUGUUUAUAGAAAUAAUAUAAA 5414

Qy    5402 AAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGGCTCGCCAATTGAACTCACTGA 5461
           |  |||:::||| ||    |::   |  |:|| ||||||   ||| |: ||||: || ||
Db    5415 AUUAGGUUUGAGAGAGAAGAUUACAAACGUGAGAGACGGAGGGCCCAUGGAACUUACAGA 5474

Qy    5462 AAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGCTGTGAAACTCGAAAAGGTTCC 5521
           | | |: |::|| |||::| :||| || |: || |:| |  : |  |: | |||| ::|
Db    5475 AGAAGUCGUUGAUGAGUUCAUGGAAGAUGUCCCUAUGUCGAUCAGGCUUGCAAAGUUUCG 5534

Qy    5522 GG------------AAAACAAAAAAGAAATGGTAGGTAATAATGTTAATAAT-------- 5561
                         |||| |   | |       ||| || ||:  :| :||:
Db    5535 AUCUCGAACCGGAAAAAAGAGUGAUGUCCGCAAAGGGAAAAAUAGUAGUAAUGAUCGGUC 5594

Qy    5562 -------AAGAAAATAAATAACAGTGGTAAGAAGGGTTTTAAAATTGAGGAAATTGAGGA 5614
                  || || |   |:|  | :| :||| |   :     ||:       |   || |
Db    5595 AGUGCCGAACAAGAACUAUAGAAAUGUUAAGGAUUUUGGAGGAAUGAGUUUUAAAAAGAA 5654

Qy    5615 TAATGTAAGTGATGACGAGT---------CTATCGCGTCATCGAGTACGTTTTAATCAAT 5665
           :||: :||  ||:|| || :         |: :|||   |:||  : ||::::|   ||:
Db    5655 UAAUUUAAUCGAUGAUGAUUCGGAGGCUACUGUCGCCGAAUCGGAUUCGUUUUA---AAU 5711
```

```
Qy       5666 ATGCCTTATACAATCAACTCTCCGAGCCAATTTGTTTACTTATCTTCCGCTTACGCAGAT 5725
              |:| |::| |  |:||   |:||    || :: |: : |:: :| :| || :  || ||
Db       5712 AUGUCUUACAGUAUCACUACUCCAUCUCAGUUCGUGUUCUUGUCAUCAGCGUGGGCCGAC 5771

Qy       5726 CCTGTGCAGCTGATCAATCTGTGTACAAATGCATTGGGTAACCAGTTTCAAACGCAACAA 5785
              ||  :  || : |: ||: : :|:|| ||:|| :: || || |||:::||||| ||||||
Db       5772 CCAAUAGAGUUAAUUAAUUUAUGUACUAAUGCCUUAGGAAAUCAGUUUCAAACACAACAA 5831

Qy       5786 GCTAGGACAACAGTCCAACAGCAATTTGCGGATGCCTGGAAACCTGTGCCTAGTATGACA 5845
              ||: | ||    |: |||   |||::    || |  :|||||||:   ||     : ||
Db       5832 GCUCGAACUGUCGUUCAAAGACAAUUCAGUGAGGUGUGGAAACCUUCACCACAAGUAACU 5891

Qy       5846 GTGAGATTTCCTGCATCGGATTTCTATGTGTATAGATATAATTCGACGCTTGATCCGTTG 5905
              |: || :: ||:|     || ::  | |:|:| || :| ||: ||    : || ||| :
Db       5892 GUUAGGUUCCCUGACAGUGACUUUAAGGUGUACAGGUACAAUGCGGUAUUAGACCCGCUA 5951

Qy       5906 ATCACGGCGTTATTAAATAGCTTTGATACTAGAAATAGAATAATAGAGGTTGATAATCAA 5965
               :||| ||  : ::|  :   :: || ||:|||||:||||:||:||| |::|| ||:||
Db       5952 GUCACAGCACUGUUAGGUGCAUUCGACACUAGAAAUAGAAUAAUAGAAGUUGAAAAUCAG 6011

Qy       5966 CCCGCACCGAATACTACTGAAATCGTTAACGCGACTCAGAGGGTAGACGATGCTACTGTA 6025
               |    || |  ||: | ||||   :  | || ||:|  || |:|||||| || || |:
Db       6012 GCGAACCCCACGACUGCCGAAACGUUAGAUGCUACUCGUAGAGUAGACGACGCAACGGUG 6071

Qy       6026 GCTATAAGGGCTTCAATCAATAATTTGGCTAATGAACTGGTTCGTGGAACTGGCATGTTC 6085
              || |:||||    | |: ||:||:::       ||| :| :  | ||||| ||    :
Db       6072 GCCAUAAGGAGCGCGAUAAAUAAUUUAAUAGUAGAAUUGAUCAGAGGAACCGGAUCUUAU 6131

Qy       6086 AATCAAGCAGGCTTTGAGACTGCTAGTGGACTTGTCTGGACCACAACTCCGGCTACTTAG 6145
              ||:|        :: ||||   |:  :||  : |: :||||| |   :|| || || :||
Db       6132 AAUCGGAGCUCUUUCGAGAGCUCUUCUGGUUUGGUUUGGACCUCUGGUCCUGCAACCUAG 6191

Qy       6146 CTATT 6150
              | |::
Db       6192 CAAUU 6196

RESULT 15
US-09-259-741-5
; Sequence 5, Application US/09259741
; Patent No. 6033895
;  GENERAL INFORMATION:
;    APPLICANT:  GARGER, STEPHEN
;    APPLICANT:  HOLTZ, R. BARRY
;    APPLICANT:  McCULLOCH, MICHAEL
;    APPLICANT:  TURPEN, THOMAS
;    TITLE OF INVENTION:  A PROCESS FOR ISOLATING AND
;    TITLE OF INVENTION:  PURIFYING VIRUSES SOLUBLE PROTEINS AND PEPTIDES FROM PLANT
;    TITLE OF INVENTION:  SOURCES
;    NUMBER OF SEQUENCES:  5
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  Howrey & Simon
;      STREET:  1299 Pennsylvania Avenue N.W.
;      CITY:  Washington
;      STATE:  DC
;      COUNTRY:  USA
;      ZIP:  20004
;    COMPUTER READABLE FORM:
;      MEDIUM TYPE:  Diskette
;      COMPUTER:  IBM Compatible
;      OPERATING SYSTEM:  DOS
;      SOFTWARE:  FastSEQ for Windows Version 2.0
;    CURRENT APPLICATION DATA:
;      APPLICATION NUMBER:  US/09/259,741
;      FILING DATE:  February 25, 1999
;      CLASSIFICATION:
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:  09/037,751
;      FILING DATE:  March 10, 1998
;    ATTORNEY/AGENT INFORMATION:
;      NAME:  Halluin, Albert P
;      REGISTRATION NUMBER:  25,277
;      REFERENCE/DOCKET NUMBER:  00801.0140.US01
```

```
;    TELECOMMUNICATION INFORMATION:
;      TELEPHONE:  650-463-8100
;      TELEFAX:  650-463-8400
;      TELEX:
;  INFORMATION FOR SEQ ID NO:  5:
;    SEQUENCE CHARACTERISTICS:
;      LENGTH:  6446 base pairs
;      TYPE:  nucleic acid
;      STRANDEDNESS:  single
;      TOPOLOGY:  unknown
;    MOLECULE TYPE:  Genomic RNA
US-09-259-741-5

  Query Match             38.5%;  Score 2449.8;  DB 3;  Length 6446;
  Best Local Similarity   44.8%;  Pred. No. 0;
  Matches 2771;  Conservative 1146;  Mismatches 2212;  Indels   60;  Gaps    8;

Qy         20 ACAACAACAATTAAAACAAAAACAACATATTACAAACAACAAACAACAACAATGGCACAC 79
              || |  |  |  |||  | ||||||||:   |    || |   ||||  ||||:|||| ||
Db         18 ACCAACAACAACAAACAACAAACAACAUUACAAUUACUAUUUACAAUUACAAUGGCAUAC 77

Qy         80 ATACAATCTATAATTAGCAACGCCCTTCTTGAAAGCGTGAGTGGTAAAAACACTCTCGTT 139
              | |||  |    |  |     ||  : |: || |  |:  | || || ||| |  : |:
Db         78 ACACAGACAGCUACCACAUCAGCUUUGCUGGACACUGUCCGAGGAAACAACUCCUUGGUC 137

Qy        140 AATGACCTTGCAAGAAGGCGCATGTACGATACGGCCGTGGAAGAATTTAACGCCCGCGAC 199
              ||:|| |: ||||   | ||  : :|||| || || |: ||||| :::||||| || |||
Db        138 AAUGAUCUAGCAAAGCGUCGUCUUUACGACACAGCGGUUGAAGAGUUUAACGCUCGUGAC 197

Qy        200 CGTAGACCAAAGGTCAACTTTTCCAAAACTATTAGCGAAGAGCAAACGCTTCTAGTCTCC 259
              || || || ||||: |||::::| |||   |: ||||| ||||| ||||:: : |   ||
Db        198 CGCAGGCCCAAGGUGAACUUUUCAAAAGUAAUAAGCGAGGAGCAGACGCUUAUUGCUACC 257

Qy        260 AACGCGTACCCGGAGTTCCAGATTACCTTTTATAATACTCAAAATGCCGTACACAGTTTG 319
                 |||:| || || ::||| |::|| ::::|:|| || |||||:||||: ||     :
Db        258 CGGGCGUAUCCAGAAUUCCAAAUUACAUUUUAUAACACGCAAAAUGCCGUGCAUUCGCUU 317

Qy        320 GCTGGAGGTTTGAGAGCATTAGAATTGGAATATCTGATGCTACAAGTTCCCTATGGATCG 379
              || || || ::| || | ::|||| :||||:|:|:||:| : ||| ::|||:| |||:|
Db        318 GCAGGUGGAUUGCGAUCUUUAGAACUGGAAUAUCUGAUGAUGCAAAUUCCCUACGGAUCA 377

Qy        380 CCGACATATGATATAGGTGGGAACTTTGCAGCACATTTGTTCAAAGGCAGGGATTACGTG 439
                ||| :|:|| |:||| ||||| :::||| | ||: :|::||| ||  | |  :| |:
Db        378 UUGACUUAUGACAUAGGCGGGAAUUUUGCAUCGCAUCUGUUCAAGGGACGAGCAUAUGUA 437

Qy        440 CATTGCTGTATGCCCAATCTGGACATACGAGATATAATGAGGCACGAAGGACAAAAGGAC 499
              || :||:| |:|||||| |:|||| : ||||| |: |:| |||||||||| || || |||
Db        438 CACUGCUGCAUGCCCAACCUGGACGUUCGAGACAUCAUGCGGCACGAAGGCCAGAAAGAC 497

Qy        500 TCAATTGAGATGTATTTGTCCAGATTGTCTCGTTCTAACAAGGTAATTCCTGAGTTTCAA 559
                 |::||  : :|  : :| ||  :     |       ||   | : ||  | :: |||
Db        498 AGUAUUGAACUAUACCUUUCUAGGCUAGAGAGAGGGGGGAAAACAGUCCCCAACUUCCAA 557

Qy        560 AGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAAGTCTGCTGCTCTAAAACTTTT 619
              | ||| || ::: |||| :| ||||||  :||  | || |    |:|    || ||:::
Db        558 AAGGAAGCAUUUGACAGAUACGCAGAAAUUCCUGAAGACGCUGUCUGUCACAAUACUUUC 617

Qy        620 CAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGAAGATACGCTGTTGCTCTGCAC 679
              |||      |||   || |||    || |    || |||   :| ||  ::|| |: |||
Db        618 CAGACAAUGCGACAUCAGCCGAUGCAGCAAUCAGGCAGAGUGUAUGCCAUUGCGCUACAC 677

Qy        680 AGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCGTTAATATCTAAGAATATACAT 739
              ||  : :|:|| |: || |   |:|||:: || || ||  :  :    || ||: : ||:
Db        678 AGCAUAUAUGACAUACCAGCCGAUGAGUUCGGGGCGGCACUCUUGAGGAAAAAUGUCCAU 737

Qy        740 GTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTACTAGACCAGACGGAGGTTACG 799
                 :| :|:|| ||:: |   ::  | ||     :  : |: ||  |  |  | |: |
Db        738 ACGUGCUAUGCCGCUUUCCACUUCUCUGAGAACCUGCUUCUUGAAGAUUCAUACGUCAAU 797

Qy        800 CTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGATGATGTTTCTTTTTTCTTTGCT 859
               :  | ||||:   |||   :::     | || || ||  |  :  | ::::  :::||
Db        798 UUGGACGAAAUCAACGCGUGUUUUUCGCGCGAUGGAGACAAGUUGACCUUUUCUUUUGCA 857
```

```
Qy        860 GATGAAAGTACTTTAAATTATAGTCATAAATACAAAAATATCTTGCATTATGTAGTTAAA 919
                 || ||:||: : ||::|: |:||:|  :|    ||:|:  :  | :|:|:    |||
Db        858 UCAGAGAGUACUCUUAAUUAUUGUCAUAGUUAUUCUAAUAUUCUUAAGUAUGUGUGCAAA 917

Qy        920 TCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAGGAATTTTTAGTCACTAGGGTT 979
               |::||:: || || :|:| :|||   |:::|| : ||||| :::::||:||| || |::
Db        918 ACUUACUUCCCGGCCUCUAAUAGAGAGGUUUACAUGAAGGAGUUUUUAGUCACCAGAGUU 977

Qy        980 AATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTATATTCTGTACAAGAGTGTTAGA 1039
              ||:|| :||::::|:|| :::  | | | :|||:|| : : :: :|:||||  |:|:
Db        978 AAUACCUGGUUUUGUAAGUUUUCUAGAAUAGAUACUUUUCUUUUGUACAAAGGUGUGGCC 1037

Qy       1040 CAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATGGAAGACGCCTTTGCTTACAAG 1099
              ||   | |    ||:||:|| |||::  :|:    || |:||||||||| :    ::||||
Db       1038 CAUAAAAGUGUAGAUAGUGAGCAGUUUUAUACUGCAAUGGAAGACGCAUGGCAUUACAAA 1097

Qy       1100 AAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTTAGAGACACGGCTTCGGTTAAC 1159
              || ||  : || |:|: |||||  || |||     :| ::   ||   |  | :| |: ||
Db       1098 AAGACUCUUGCAAUGUGCAACAGCGAGAGAAUCCUCCUUGAGGAUUCAUCAUCAGUCAAU 1157

Qy       1160 TTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCGCTGTTTGAGGGTTCTATTACC 1219
              :  :||:: || || |:|| ||| |:||: |: |:|||  : :: ||   ::|: :
Db       1158 UACUGGUUUCCCAAAAUGAGGGAUAUGGUCAUCGUACCAUUAUUCGACAUUUCUUUGGAG 1217

Qy       1220 AGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGTGACTTCGTTTACACAGTGCTT 1279
              |  |  |||| |||  | |  || |:| : |:         || ::||: :  ||||:||::
Db       1218 ACUAGUAAGAGGACGCGCAAGGAAGUCUUAGUGUCCAAGGAUUUCGUGUUUACAGUGCUU 1277

Qy       1280 AATCATATCAGAACATATCAAGCCAAAGCGTTAACTTACCAGAACGTATTATCTTTCGTG 1339
              || || |:  |||||:| || || |||||   : || :||    || |: :: :| :: |:
Db       1278 AACCACAUUCGAACAUACCAGGCGAAAGCUCUUACAUACGCAAAUGUUUUGUCCUUUGUC 1337

Qy       1340 GAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACTGCTAGGTCTGAATGGGATGTA 1399
              || :| |:  ||:|  | |: |: |: || ||:|: || || |||:| |||:||||:|:
Db       1338 GAAUCGAUUCGAUCGAGGGUAAUCAUUAACGGUGUGACAGCGAGGUCCGAAUGGGAUGUG 1397

Qy       1400 GATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTCTTGCAGACTAAGCTGGCTGCG 1459
              || ||| |   :   : ||| ||::|:| |:||| :: : | :||| ||:||||: || |
Db       1398 GACAAAUCUUUGUUACAAUCCUUGUCCAUGACGUUUUACCUGCAUACUAAGCUUGCCGUU 1457

Qy       1460 CTTCAAGACGATATAGTAATGGAAAGTTTCGGTGCTTGGATAAGACCACTTCTGAACTT 1519
              |:  | || ||  :| : |:  | |||:::  |   |      || ||    :   | | :
Db       1458 CUAAAGGAUGACUUACUGAUUAGCAAGUUUAGUCUCGGUUCGAAAACGGUGUGCCAGCAU 1517

Qy       1520 ATTTGGGATGAGGTGGCAAATTTTTTGGAAACGTTTTCCCCACTATCAAAGAGAGATTG 1579
               : :||||:||| :          :::|| |||| :: ||| |  : ||||||||  :
Db       1518 GUGUGGGAUGAGAUUUCGCUGGCGUUUGGGAACGCAUUUCCCUCCGUGAAAGAGAGGCUC 1577

Qy       1580 GTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTGAAGATCAAGATCCCAGATCTG 1639
               :|| ||||||| :: :    |:    |   | ||  :  |||:|| | : || ||:|:
Db       1578 UUGAACAGGAAACUUAUCAGAGUGGCAGGCGACGCAUUAGAGAUCAGGGUGCCUGAUCUA 1637

Qy       1640 TATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACCAAGTCTGAGGAGTTACCGCAT 1699
              :|:|: || :   | ||||| :: |:  |:|| :|||      :|:| |||  : ||
Db       1638 UAUGUGACCUUCCACGACAGAUUAGUGACUGAGUACAAGGCCUCUGUGGACAUGCCUGCG 1697

Qy       1700 CTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATGTACGACGCGTTATCAGAATTA 1759
              |: || |: | |||| |  : |||||| | ||     |:|:|| | ||  : :|||| ::|
Db       1698 CUUGACAUUAGGAAGAAGAUGGAAGAAACGGAAGUGAUGUACAAUGCACUUUCAGAGUUA 1757

Qy       1760 TCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAGTTCAAAGACATGTGCAAGGCT 1819
              :|  :  : | ||    |:|| || ::|||: : |      ::       | |:|:|| |  |:
Db       1758 UCGGUGUUAAGGGAGUCUGACAAAUUCGAUGUUGAUGUUUUUCCCAGAUGUGCCAAUCU 1817

Qy       1820 TTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTTGCAGTGGCCGAGAATAGAAGC 1879
              :: || |::    ||        ||||||     |: |: |: || |:        ||:   |||
Db       1818 UUGGAAGUUGACCCAAUGACGGCAGCGAAGGUUAUAGUCGCGGUCAUGAGCAAUGAGAGC 1877

Qy       1880 GGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAATGTGGCTAAGGCTCT------T 1933
              ||: : ||:|: || :::||     || || |||| |||:|: ||     ||: :      :
Db       1878 GGUCUGACUCUCACAUUUGAACGACCUACUGAGGCGAAUGUUGCGCUAGCUUUACAGGAU 1937

Qy       1934 AAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCGACATCCGAAGAGGTGAACGTA 1993
                ||   | |||:| || |   |    :     ::   | | |   | || |
Db       1938 CAAGAGAAGGCUUCAGAAGGUGCUUUGGUAGUUACCUCAAGAGAAGUUGAAGAACCGUCC 1997

Qy       1994 AATAAATTTTCTATTGCTGAGAAAGGGAGATTGCCTGTGTGTGCAGAAAGTCATGGTTTG 2053
              | ||   ::| |: ||      || | |       |   |:   |   | |:  :  |
Db       1998 AUGAAGGGUUCGAUGGCCAGAGGAGAGUUACAAUUAGCUGGUCUUGCUGGAGAUCAUCCG 2057

Qy       2054 ACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTCAACGATTTCCATAAGGCTTGC 2113
                |    |  | :     || || ||||| : |||:|   :   |   | :: ||:| |||
Db       2058 GAGUCGUCCUAUUCUAAGAACGAGGAGAUAGAGUCUUUAGAGCAGUUUCAUAUGGCAACG 2117

Qy       2114 GTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTCTACACTGGCTCACTCAAAGTT 2173
              |  ||:     : |::    ||||| |:|    :|| ::|: :|||| ||  |  : ||||::
Db       2118 GCAGAUUCGUUAAUUCGUAAGCAGAUGAGCUCGAUUGUGUACACGGGUCCGAUUAAAGUU 2177

Qy       2174 CAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCGTTGTCCGCCACTGTATCAAAT 2233
              || ||||:||| |||: : : || ||  :|| ||| :|  : :| ||   | |: :| ||:
Db       2178 CAGCAAAUGAAAAACUUUAUCGAUAGCCUGGUAGCAUCACUAUCUGCUGCGGUGUCGAAU 2237

Qy       2234 CTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCTGATTCCAGGGAGAAAGTTGGT 2293
              |:    ||||    |: || ||:  ||  |     :||   :||  || |  | ||  ::||
Db       2238 CUCGUCAAGAUCCUCAAAGAUACAGCUGCUAUUGACCUUGAAACCCGUCAAAAGUUUGGA 2297

Qy       2294 GTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCTGCGGCCAAAGGTCATTCATGG 2353
              |: : |||:|:  | :   |  |||:|| :  :||||||  ||||||| |:||: ||:||
Db       2298 GUCUUGGAUGUUGCAUCUAGGAAGUGGUUAAUCAAACCAACGGCCAAGAGUCAUGCAUGG 2357

Qy       2354 GGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCACTTCTATCTTATGAAGGAGAT 2413
              || |::|:          ||  | ||||       :    || |:: :    :|:|| |   |
Db       2358 GGUGUUGUUGAAACCCACGCGAGGAAGUAUCAUGUGGCGCUUUUGGAAUAUGAUGAGCAG 2417

Qy       2414 AGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTATCATCTGATACAATGGTATAT 2473
               |  :||:|||       || :|||| || |: ||:|:      :|:||  |   : |: :|:
Db       2418 GGUGUGGUGACAUGCGAUGAUUGGAGAAGAGUAGCUGUCAGCUCUGAGUCUGUUGUUUAU 2477

Qy       2474 TCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATGAGAGACGGTGAACCCCACGAA 2533
              :| || |: || || |:|  || :|:| | | |     :  || |||| ||||| || |
Db       2478 UCCGACAUGGCGAAACUCAGAACUCUGCGCAGACUGCUUCGAAACGGAGAACCGCAUGUC 2537

Qy       2534 CCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGTTGTGGAAAGTACAAAGGAGAT 2593
                :|  |||||| : |: |::|:||| || |: || || :|:|| ||    ||||| |   :
Db       2538 AGUAGCGCAAAGGUUGUUCUUGUGGACGGAGUUCCGGGCUGUGGAAAACCAAAGAAAUU 2597

Qy       2594 TTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTTCCTGGAAAACAAGCTGCTGCT 2653
               ::   ||  :: |: ::||:|| ||: : |: :: |: ||:|| || ||||| || |
Db       2598 CUUUCCAGGGUUAAUUUUGAUGAAGAUCUAAUUUUAGUACCUGGGAAGCAAGCCGCGGAA 2657

Qy       2654 ATGATCAGAAGAAGGGCTAATTCATCTGGACTGATAAGAGCCACAATGGACAATGTGAGA 2713
              |:||:|||||||| | || ||::| :| ||  : |:    ||||| | |||||| |: | |
Db       2658 AUGAUCAGAAGACGUGCGAAUUCCUCAGGGAUUAUUGUGGCCACGAAGGACAACGUUAAA 2717

Qy       2714 ACGGTAGATTCACTTCTAATGCATCCAAAACCGCGATCAC---------ACAAGAGGCTT 2764
              || |: ||::|  :  : |:| |:          | |||         ||||||| :
Db       2718 ACCGUUGAUUCUUUCAUGAUGAAUUUUGGAAAAGCACACGCUGUCAGUUCAAGAGGUUA 2777

Qy       2765 TTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTTAACTTCCTGGTGCTTATCTCT 2824
              :: |::||:|||||||::||:| :||| || ||::|:|::|| :: |: |:|    |: :|
Db       2778 UUCAUUGAUGAAGGGUUGAUGUUGCAUACUGGUUGUGUUAAUUUUCUUGUGGCGAUGUCA 2837

Qy       2825 GGTTGCGACATCGCATACATTTACGGAGATACACAGCAGATTCCTTTCATTAACAGAGTT 2884
                 :|||| |: |||:|   :::||||||| |||||||||||::|| : ||: || ||||::
Db       2838 UUGUGCGAAAUUGCAUAUGUUUACGGAGACACACAGCAGAUUCCAUACAUCAAUAGAGUU 2897

Qy       2885 CAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAAGTGGATGAAGTTGAGATGAGG 2944
                    ::||||:| |||    ||::::| ||  :| |||: || || |: ||||    |
Db       2898 UCAGGAUUCCCGUACCCCGCCCAUUUUGCCAAAUUGGAAGUUGACGAGGUGGAGACACGC 2957

Qy       2945 AGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTCCTACAATCGAAGTACGAAGGA 3004
              || || || |:  | :| |||| ||:|:|      :: |:  |    ||  :| || ||
Db       2958 AGAACUACUCUCCGUUGUCCAGCCGAUGUCACACAUUAUCUGAACAGGAGAUAUGAGGGC 3017

Qy       3005 GCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCATCTGAGATGATAGGCGGTAAG 3064
                 |: |  | |||::|  | |:  ||   :| |: :|     ||||:| : |||||
```

```
Db          3018 UUUGUCAUGAGCACUUCUUCGGUUAAAAAGUCUGUUUCGCAGGAGAUGGUCGGCGGAGCC 3077

Qy          3065 GGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGGAAAATTGTAACTTTCACTCAGGCT 3124
                 |  |:  :||     : :| |||||  :  | || || |:  : ||::: || ||   |
Db          3078 GCCGUGAUCAAUCCGAUCUCAAAACCCUUGCAUGGCAAGAUCCUGACUUUUACCCAAUCG 3137

Qy          3125 GATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTGAACACCGTTCATGAGATCCAA 3184
                 ||:|||    |    :           |  || :|:      |:|:   |||| |: ||:||   : |||
Db          3138 GAUAAAGAAGCUCUGCUUUCAAGAGGGUAUUCAGAUGUUCACACUGUGCAUGAAGUGCAA 3197

Qy          3185 GGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACGGCAACTCCACTGACTCTGATT 3244
                 || || ||  :        ||:|: :| |: |: || ::  ||    | || |||  :   |   : |::
Db          3198 GGCGAGACAUACUCUGAUGUUUCACUAGUUAGGUUAACCCCUACACCAGUCUCCAUCAUU 3257

Qy          3245 TCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGACACACAAAGAGCTTCAAATAT 3304
                  |          ||| ||:|:: :  |:|||   :| | || |||||          :||| :|
Db          3258 GCAGGAGACAGCCCACAUGUUUUGGUCGCAUUGUCAAGGCACACCUGUUCGCUCAAGUAC 3317

Qy          3305 TACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGTGATTTGTCTTCTTTAAGCTCC 3364
                 :|||| |: |:  :  ||:||:::||:       |: |::|| ||: :         : |||:|
Db          3318 UACACUGUUGUUAUGGAUCCUUUAGUUAGUAUCAUUAGAGAUCUAGAGAAACUUAGCUCG 3377

Qy          3365 TTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGATAGCAATTACAGATGGATGCA 3424
                 : | : ::||| |:|:|:| ||: || ||||| |      |:|||||::|||||: ||   |
Db          3378 UACUUGUUAGAUAUGUAUAAGGUCGAUGCAGGAACACAAUAGCAAUUACAGAUUGACUCG 3437

Qy          3425 GTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAATCAGGAGACTTTCCAGATCTA 3484
                 |:|::||||||:    ||:|: :::|: ||| | || ||   | || ||   :: | ||: :
Db          3438 GUGUUCAAAGGUUCCAAUCUUUUUGUUGCAGCGCCAAAGACUGGUGAUAUUUCUGAUAUG 3497

Qy          3485 CAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACTATACTTAACAAGTATGATGCT 3544
                 |||:: :| :| ||:    :| |:||| || || || || |:   : || ||  : :||:||:
Db          3498 CAGUUUUACUAUGAUAAGUGUCUCCCAGGCAACAGCACCAUGAUGAAUAAUUUUGAUGCU 3557

Qy          3545 GTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAGGATTGTGTTCTTGATTTTTCC 3604
                 |::||||:||||::    :|| |  :     : ||:|: || ||::|  :  : ||: : :|
Db          3558 GUUACCAUGAGGUUGACUGACAUUUCAUUGAAUGUCAAAGAUUGCAUAUUGGAUAUGUCU 3617

Qy          3605 AAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTAGAGCCAGTTTTGCGTACCGCG 3664
                 ||   : :: |    ||| |||||     |    |   |:|  ||  :  : || || |||
Db          3618 AAGUCUGUUGCUGCGCCUAAGGAUCAAAUCAAACCACUAAUACCUAUGGUACGAACGGCG 3677

Qy          3665 GCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTGGTTGCAATGATTAAAAGAAAT 3724
                 || |||  |||| |     | ||||:| : |||||: : |: || |:||::||||| ||
Db          3678 GCAGAAAUGCCACGCCAGACUGGACUAUUGGAAAAUUUAGUGGCGAUGAUUAAAAGGAAC 3737

Qy          3725 TTCAACGCACCAGACCTGACGGGGACGATTGACATTGAGAGCACCGCATCTGTTGTAGTA 3784
                 ::  |||||||| ||   :| | || |   |::|| |::|| |  || |||:|: : |: |:|
Db          3738 UUUAACGCACCCGAGUUGUCUGGCAUCAUUGAUAUUGAAAAUACUGCAUCUUUAGUUGUA 3797

Qy          3785 GATAAGTTTTTTGATAGCTATTTTATTAAAAAAGAAAAATACACAAAAAATATTGCTGGA 3844
                 ||:|||::::::||:|| :|:::   ::||| || ||| | |  |||| || | :| :
Db          3798 GAUAAGUUUUUUGAUAGUUAUUUGCUUAAAGAAAAAAGAAAACCAAAUAAAAAUGUUUCU 3857

Qy          3845 GTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAACAGGAAAGAAGTACTATTGGAC 3904
                  :| :  |   |  || :|   : |  |||:||:: |||||    | || | |:|  | : | |
Db          3858 UUGUUCAGUAGAGAGUCUCUCAAUAGAUGGUUAGAAAAGCAGGAACAGGUAACAAUAGGC 3917

Qy          3905 GACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATCGATCAGTACAAGCACATGATC 3964
                  |  : ||  | :   |::::  |||: :||| ||  : ||:|||:|||  ||||:||:
Db          3918 CAGCUCGCAGAUUUUGAUUUUGUAGAUUUGCCAGCAGUUGAUCAGUACAGACACAUGAUU 3977

Qy          3965 AAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAGAATGAATACCCTGCTCTGCAA 4024
                 || || ||||| || || |||::||||  ::|||: || |  || :|||| ||: :|||
Db          3978 AAAGCACAACCCAAGCAAAAAUUGGACACUUCAAUCCAAACGGAGUACCCGGCUUUGCAG 4037

Qy          4025 ACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTGGCCGGTTTCT---CAGAGCTT 4081
                 || |::|: :||||::| ||   |||:||| |  |: :: | |   :: :    ||||::
Db          4038 ACGAUUGUGUACCAUUCAAAAAAGAUCAAUGCAAUAUUUGGCCCGUUGUUUAGUGAGCUU 4097

Qy          4082 ACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTTCTTTTCTTTACTAGGAAAACT 4141
                 || |||    : |: ||     ::||::| |  |  ::: : :: :: || || || ||
Db          4098 ACUAGGCAAUUACUGGACAGUGUUGAUUCGAGCAGAUUUUUGUUUUUCACAAGAAAGACA 4157

Qy          4142 CCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCGCACGTTCCTATGGATGTGTTA 4201
                 ||||  ||||:: | || :: ::|   ||:|:||||   || |: || |:|||:|: ::
Db          4158 CCAGCGCAGAUUGAGGAUUUCUUCGGAGAUCUCGACAGUCAUGUGCCGAUGGAUGUCUUG 4217

Qy          4202 GAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAGTTTCATTGTGCTGTAGAGTAT 4261
                 || |:|||:|: :| || :| || || :| ||||| || :: || :|:|| |:||| :|
Db          4218 GAGCUGGAUAUAUCAAAAUACGACAAAUCUCAGAAUGAAUUCCACUGUGCAGUAGAAUAC 4277

Qy          4262 GAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCCGAAGTGTGGAAACAAGGGCAC 4321
                 || |: :||  ||||::|||: :   | ||  :: ::||  ||||: :||||||||||||
Db          4278 GAGAUCUGGCGAAGAUUGGGUUUUGAAGACUUCUUGGGAGAAGUUUGGAAACAAGGGCAU 4337

Qy          4322 AGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAGACATGTCTGTGGTATCAAAGG 4381
                 || || || ||   : |||||::| |  || || |: || || :|   : :||:|:|||||
Db          4338 AGAAAGACCACCCUCAAGGAUUAUACCGCAGGUAUAAAAACUUGCAUCUGGUAUCAAAGA 4397

Qy          4382 AAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTTATAATAGCAGCTTGCTTGGGT 4441
                 || ||||| || |: || || ::||: || || ||:|: |: |: || || :| ::||
Db          4398 AAGAGCGGGGACGUCACGACGUUCAUUGGAAACACUGUGAUCAUUGCUGCAUGUUUGGCC 4457

Qy          4442 TCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTTTGTGGAGACGATTCCGTTTTG 4501
                 :| |:| : ||||:||| ||   : |: ||||| || ::::| || |||||:     :  :|
Db          4458 UCGAUGCUUCCGAUGGAGAAAAUAAUCAAAGGAGCCUUUUGCGGUGACGAUAGUCUGCUG 4517

Qy          4502 TATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCATGTGCTAATCTCATGTGGAAT 4561
                 :| :::||||||||::  || :: || ||  : ||     :  || ||:|: |:|:||||:
Db          4518 UACUUUCCAAAGGGUUGUGAGUUUCCGGAUGUGCAACACUCCGCGAAUCUUAUGUGGAAU 4577

Qy          4562 TTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTTTGTGGTAGATACATCATACAC 4621
                 :::|| || ||||:|: :| |||    |:| || :||::::| || |||:|  : |:|||
Db          4578 UUUGAAGCAAAACUGUUUAAAAAACAGUAUGGAUACUUUUGCGGAAGAUAUGUAAUACAU 4637

Qy          4622 CATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAGTTGATCTCCAAACTTGGGGCA 4681
                 || || |  |||   |: |:|:|::| ||:||  : |||::||:|:| ||||::|| ||
Db          4638 CACGACAGAGGAUGCAUUGUGUAUUACGAUCCCCUAAAGUUGAUCUCGAAACUUGGUGCU 4697

Qy          4682 AAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGGGTGTCTTTGTGCGATGTTGCT 4741
                 ||||| |:||||||::  || |||:: || |||:: ||    |:|: : :| ||:|::||:
Db          4698 AAACACAUCAAGGAUUGGGAACACUUGGAGGAGUUCAGAAGGUCUCUUUGUGAUGUUGCU 4757

Qy          4742 TGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTGAACGCAGCTATCAAGGAGGTT 4801
                   ::|| :    || :|     :     |    | ||| :| |||  ||: :    |||||::
Db          4758 GUUUCGUUGAACAAUUGUGCGUAUUAC---ACACAGUUGGACGACGCUGUAUGGGAGGUU 4814

Qy          4802 CATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGTGTTAACAAATTTTTGTGTGAT 4861
                 ||:|| |||||    :    ||::||:::| :: :||  |: :     || : :::|: :||:
Db          4815 CAUAAGACCGCCCCUCCAGGUUCGUUUGUUUAUAAAAGUCUGGUGAAGUAUUUGUCUGAU 4874

Qy          4862 AAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAGTCTCAGAGATACTGTCAAAAT 4921
                 ||| :: : :::||||  :::|::: :| |:|||: :    : : | ||  |  |: || |:
Db          4875 AAAGUUCUUUUUAGAAGUUUGUUUAUAGAUGGCUCUAGUUGUUAAAGGAAAAGUGAAUAU 4934

Qy          4922 TAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACTTCCGGCATTCATGACTAAGGT 4981
                  |  |||:: |: || |:  | |||  |||  |||:  : ||| |  :  : ||     |:
Db          4935 CAAUGAGUUUAUCGACCUGACAAAAAUGGAGAAGAUCUUACCGUCGAUGUUUACCCCUGU 4994

Qy          4982 CAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGCTGTTAAGAATGATAGTCTTTC 5041
                  |||||:|::|      :| |  |: || || |: |:|| :  : ||||:||      : :|
Db          4995 AAAGAGUGUUAUGUGUUCCAAAGUUGAUAAAAUAAUGGUUCAUGAGAAUGAGUCAUUGUC 5054

Qy          5042 TGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAAAGGGTATGTGTGCTTAGCTGA 5101
                  || |:  |  : |::||||| |::|||  :  :: | |  || :| |: :| ::||| |
Db          5055 AGAGGUGAACCUUCUUAAAGGAGUUAAGCUUAUUGAUAGUGGAUACGUCUGUUUAGCCGG 5114

Qy          5102 TTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTGCCGTGGTGGTGTCAGTGTTTG 5161
                 :::||: |:   | || |||:||||   : || || || :|| | || ||:|: || |: :|
Db          5115 UUUGGUCGUCACGGGCGAGUGGAACUUGCCUGACAAUUGCAGAGGAGGUGUGAGCGUGUG 5174

Qy          5162 TATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAACGCTGGGTGCGTATCACGCCCC 5221
                 : : |: || || || |:| ||||     | || || || |: ||  | :|  || |  |
Db          5175 UCUGGUGGACAAAAGGAUGGAAAGAGCCGACGAGGCCACUCUCGGAUCUUACUACACAGC 5234
```

```
Qy        5222 TGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAATTATTCAATAACATCCGAGGA 5281
                ||:   || || |  :::   :: ||| :  : || ||::|:| |:|| |  || ||||
Db        5235 AGCUGCAAAGAAAAGAUUUCAGUUCAAGGUCGUUCCCAAUUAUGCUAUAACCACCCAGGA 5294

Qy        5282 TGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAAAGGAGTGGCTATGGAAGAAGG 5341
                ||   |||  ||   :||||||: ::||: ||:|: | |   |:|   |:|  ||  ||
Db        5295 CGCGAUGAAAAACGUCUGGCAAGUUUUAGUUAAUAUUAGAAAUGUGAAGAUGUCAGCGGG 5354

Qy        5342 ATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGTAGTACATAAAAATAATGTAAG 5401
                : |:|:||  : :|: :||||:: |: :|  : :|: : |:  |:| |||:||: :||
Db        5355 UUUCUGUCCGCUUUCUCUGGAGUUUGUGUCGGUGUGUAUUGUUUAUAGAAAUAAUAUAAA 5414

Qy        5402 AAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGGCTCGCCAATTGAACTCACTGA 5461
               |  |||:::||| ||    |::   |  |:|| ||||||   ||| |: ||||: || ||
Db        5415 AUUAGGUUUGAGAGAGAAGAUUACAAACGUGAGAGACGGAGGGCCCAUGGAACUUACAGA 5474

Qy        5462 AAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGCTGTGAAACTCGAAAAGGTTCC 5521
               | | |: |::|| |||::| :||| || |: || |:| |  : |  |: | |||| ::|
Db        5475 AGAAGUCGUUGAUGAGUUCAUGGAAGAUGUCCCUAUGUCGAUCAGGCUUGCAAAGUUUCG 5534

Qy        5522 GG------------AAAACAAAAAAGAAATGGTAGGTAATAATGTTAATAAT-------- 5561
                             |||| |   | |       ||| || ||:  :| :||:
Db        5535 AUCUCGAACCGGAAAAAAGAGUGAUGUCCGCAAAGGAAAAAAUAGUAGUAAUGAUCGGUC 5594

Qy        5562 -------AAGAAAATAAATAACAGTGGTAAGAAGGGTTTTAAAATTGAGGAAATTGAGGA 5614
                      || || |   |:|  | :| :||| |   :     ||:       |   || |
Db        5595 AGUGCCGAACAAGAACUAUAGAAAUGUUAAGGAUUUUGGAGGAAUGAGUUUUAAAAAGAA 5654

Qy        5615 TAATGTAAGTGATGACGAGT---------CTATCGCGTCATCGAGTACGTTTTAATCAAT 5665
               :||: :||  ||:|| || :         |: :|||   |:||  : ||::::|   ||:
Db        5655 UAAUUUAAUCGAUGAUGAUUCGGAGGCUACUGUCGCCGAAUCGGAUUCGUUUUA---AAU 5711

Qy        5666 ATGCCTTATACAATCAACTCTCCGAGCCAATTTGTTTACTTATCTTCCGCTTACGCAGAT 5725
               |:| |::| |  |:||   |:||    || :: |: : |:: :| :| ||  :  || ||
Db        5712 AUGUCUUACAGUAUCACUACUCCAUCUCAGUUCGUGUUCUUGUCAUCAGCGUGGGCCGAC 5771

Qy        5726 CCTGTGCAGCTGATCAATCTGTGTACAAATGCATTGGGTAACCAGTTTCAAACGCAACAA 5785
               ||  :  || : |: ||: : :|:|| ||:||| :: || || |||:::||||| ||||||
Db        5772 CCAAUAGAGUUAAUUAAUUUAUGUACUAAUGCCUUAGGAAAUCAGUUUCAAACACAACAA 5831

Qy        5786 GCTAGGACAACAGTCCAACAGCAATTTGCGGATGCCTGGAAACCTGTGCCTAGTATGACA 5845
               ||: | ||    |: |||    |||::    || |  :|||||||:   ||     : ||
Db        5832 GCUCGAACUGUCGUUCAAAGACAAUUCAGUGAGGUGUGGAAACCUUCACCACAAGUAACU 5891

Qy        5846 GTGAGATTTCCTGCATCGGATTTCTATGTGTATAGATATAATTCGACGCTTGATCCGTTG 5905
               |: || :: ||:|     || ::  | |:|:| || :| ||: ||    : || ||| :
Db        5892 GUUAGGUUCCCUGACAGUGACUUUAAGGUGUACAGGUACAAUGCGGUAUUAGACCCGCUA 5951

Qy        5906 ATCACGGCGTTATTAAATAGCTTTGATACTAGAAATAGAATAATAGAGGTTGATAATCAA 5965
                :||| ||  : ::|  :    :: || ||:|||||:||||:||:||| |::|| ||:||
Db        5952 GUCACAGCACUGUUAGGUGCAUUCGACACUAGAAAUAGAAUAAUAGAAGUUGAAAAUCAG 6011

Qy        5966 CCCGCACCGAATACTACTGAAATCGTTAACGCGACTCAGAGGGTAGACGATGCTACTGTA 6025
                |    || |  ||: | ||||   :  | || ||:|  || |:|||||| || || |:
Db        6012 GCGAACCCCACGACUGCCGAAACGUUAGAUGCUACUCGUAGAGUAGACGACGCAACGGUG 6071

Qy        6026 GCTATAAGGGCTTCAATCAATAATTTGGCTAATGAACTGGTTCGTGGAACTGGCATGTTC 6085
               || |:||||    | |: ||:||:::       ||| :| :  | |||||  ||    :
Db        6072 GCCAUAAGGAGCGCGAUAAAUAAUUUAAUAGUAGAAUUGAUCAGAGGAACCGGAUCUUAU 6131

Qy        6086 AATCAAGCAGGCTTTGAGACTGCTAGTGGACTTGTCTGGACCACAACTCCGGCTACTTAG 6145
               ||:|        :: ||||    |:  :||  : |  :||||  |    |||||  | :||
Db        6132 AAUCGGAGCUCUUUCGAGAGCUCUUCUGGUUUGGUUUGGACGUCUGGGCCGGCAUCAUAG 6191

Qy        6146 CTATTGTTG 6154
               | |::  :|
Db        6192 CAAUUAAUG 6200

Search completed: July 28, 2005, 09:02:21
Job time : 738.916 secs
```

```
                        GenCore version 5.1.6
               Copyright (c) 1993 - 2005  Compugen Ltd.

OM nucleic - nucleic search, using sw model

Run on:         July 28, 2005, 08:33:34 ; Search time 2408.02 Seconds
                                          (without alignments)
                                          17081.170 Million cell updates/sec

Title:          US-09-551-494-5
Perfect score:  6355
Sequence:       1 gatgttttaatagttttcga..........taaccgccggtagcggccca 6355

Scoring table:  IDENTITY_NUC
                Gapop 10.0 , Gapext 1.0

Searched:       7287783 seqs, 3236178273 residues

Total number of hits satisfying chosen parameters:      14575566

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
                 Maximum Match 100%
                 Listing first 45 summaries

Database :       Published_Applications_NA:*
               1:  /cgn2_6/ptodata/2/pubpna/US07_PUBCOMB.seq:*
               2:  /cgn2_6/ptodata/2/pubpna/PCT_NEW_PUB.seq:*
               3:  /cgn2_6/ptodata/2/pubpna/US06_NEW_PUB.seq:*
               4:  /cgn2_6/ptodata/2/pubpna/US06_PUBCOMB.seq:*
               5:  /cgn2_6/ptodata/2/pubpna/US07_NEW_PUB.seq:*
               6:  /cgn2_6/ptodata/2/pubpna/PCTUS_PUBCOMB.seq:*
               7:  /cgn2_6/ptodata/2/pubpna/US08_NEW_PUB.seq:*
               8:  /cgn2_6/ptodata/2/pubpna/US08_PUBCOMB.seq:*
               9:  /cgn2_6/ptodata/2/pubpna/US09A_PUBCOMB.seq:*
              10:  /cgn2_6/ptodata/2/pubpna/US09B_PUBCOMB.seq:*
              11:  /cgn2_6/ptodata/2/pubpna/US09C_PUBCOMB.seq:*
              12:  /cgn2_6/ptodata/2/pubpna/US09_NEW_PUB.seq:*
              13:  /cgn2_6/ptodata/2/pubpna/US10A_PUBCOMB.seq:*
              14:  /cgn2_6/ptodata/2/pubpna/US10B_PUBCOMB.seq:*
              15:  /cgn2_6/ptodata/2/pubpna/US10C_PUBCOMB.seq:*
              16:  /cgn2_6/ptodata/2/pubpna/US10D_PUBCOMB.seq:*
              17:  /cgn2_6/ptodata/2/pubpna/US10E_PUBCOMB.seq:*
              18:  /cgn2_6/ptodata/2/pubpna/US10F_PUBCOMB.seq:*
              19:  /cgn2_6/ptodata/2/pubpna/US10G_PUBCOMB.seq:*
              20:  /cgn2_6/ptodata/2/pubpna/US10H_PUBCOMB.seq:*
              21:  /cgn2_6/ptodata/2/pubpna/US10I_PUBCOMB.seq:*
              22:  /cgn2_6/ptodata/2/pubpna/US10_NEW_PUB.seq:*
              23:  /cgn2_6/ptodata/2/pubpna/US11A_PUBCOMB.seq:*
              24:  /cgn2_6/ptodata/2/pubpna/US11_NEW_PUB.seq:*
              25:  /cgn2_6/ptodata/2/pubpna/US60_NEW_PUB.seq:*
              26:  /cgn2_6/ptodata/2/pubpna/US60_PUBCOMB.seq:*

      Pred. No. is the number of results predicted by chance to have a
      score greater than or equal to the score of the result being printed,
      and is derived by analysis of the total score distribution.

                                     SUMMARIES
                 %
Result          Query
  No.   Score   Match Length DB  ID                        Description
-------------------------------------------------------------------------
    1    6355   100.0   6355 15  US-10-321-434-7            Sequence 7, Appli
    2    2468    38.8   6395 10  US-09-962-527-1            Sequence 1, Appli
    3    2468    38.8   6395 19  US-10-828-029-1            Sequence 1, Appli
    4  2466.4    38.8   6395 17  US-10-338-592-2            Sequence 2, Appli
    5  2455.4    38.6   6439 10  US-09-962-527-2            Sequence 2, Appli
    6  2455.4    38.6   6439 19  US-10-828-029-2            Sequence 2, Appli
    7  2452.2    38.6   6475 10  US-09-962-527-4            Sequence 4, Appli
    8  2452.2    38.6   6475 19  US-10-828-029-4            Sequence 4, Appli
    9  2449.8    38.5   6446 10  US-09-962-527-5            Sequence 5, Appli
   10  2449.8    38.5   6446 19  US-10-828-029-5            Sequence 5, Appli
   11  2431.2    38.3   6425 10  US-09-962-527-3            Sequence 3, Appli
   12  2431.2    38.3   6425 19  US-10-828-029-3            Sequence 3, Appli
   13  2291.4    36.1  11222 19  US-10-679-620-73           Sequence 73, Appl
   14  2291.4    36.1  11641  9  US-09-993-059-33           Sequence 33, Appl
   15  2291.4    36.1  11641 15  US-10-103-327-33           Sequence 33, Appl
   16  2291.4    36.1  11641 18  US-10-684-300-13           Sequence 13, Appl
   17  2291.4    36.1  11641 18  US-10-684-349-13           Sequence 13, Appl
   18  2291.4    36.1  11641 20  US-10-851-388-33           Sequence 33, Appl
   19  2291.4    36.1  11641 22  US-10-984-389-33           Sequence 33, Appl
   20  2289.8    36.0  10600 16  US-10-356-708-1            Sequence 1, Appli
   21  2289.8    36.0  10600 19  US-10-280-913A-1           Sequence 1, Appli
   22  2289.8    36.0  10600 19  US-10-684-134-1            Sequence 1, Appli
   23  2289.8    36.0  10600 19  US-10-637-758-1            Sequence 1, Appli
   24  2289.8    36.0  10624 16  US-10-356-708-2            Sequence 2, Appli
   25  2289.8    36.0  10624 19  US-10-280-913A-2           Sequence 2, Appli
   26  2289.8    36.0  10624 19  US-10-684-134-2            Sequence 2, Appli
   27  2289.8    36.0  10624 19  US-10-637-758-2            Sequence 2, Appli
   28  2286.6    36.0   7685  9  US-09-949-317-22           Sequence 22, Appl
   29  2286.6    36.0   7685  9  US-09-949-317-25           Sequence 25, Appl
   30  2286.6    36.0   7685  9  US-09-949-316-22           Sequence 22, Appl
   31  2286.6    36.0   7685  9  US-09-949-316-25           Sequence 25, Appl
   32  2286.6    36.0   7685 14  US-10-200-051-22           Sequence 22, Appl
   33  2286.6    36.0   7685 14  US-10-200-051-25           Sequence 25, Appl
   34  2286.6    36.0   7686  9  US-09-949-317-23           Sequence 23, Appl
   35  2286.6    36.0   7686  9  US-09-949-316-23           Sequence 23, Appl
   36  2286.6    36.0   7686 14  US-10-200-051-23           Sequence 23, Appl
   37  2286.6    36.0   7687  9  US-09-949-317-24           Sequence 24, Appl
   38  2286.6    36.0   7687  9  US-09-949-316-24           Sequence 24, Appl
   39  2286.6    36.0   7687 14  US-10-200-051-24           Sequence 24, Appl
   40  2286.6    36.0   7688  9  US-09-949-317-27           Sequence 27, Appl
   41  2286.6    36.0   7688  9  US-09-949-316-27           Sequence 27, Appl
   42  2286.6    36.0   7688 14  US-10-200-051-27           Sequence 27, Appl
   43  2286.6    36.0  10132  9  US-09-978-199-3            Sequence 3, Appli
   44    2285    36.0   7926 14  US-10-119-330-1            Sequence 1, Appli
   45    2285    36.0   7926 18  US-10-632-240-1            Sequence 1, Appli


                                 ALIGNMENTS


RESULT 1
US-10-321-434-7
; Sequence 7, Application US/10321434
; Publication No. US20030135882A1
; GENERAL INFORMATION:
;  APPLICANT: Metzlaff, Michael
;  APPLICANT:  Meulewater, Frank
;  APPLICANT:  Gossel,, Veronique
;  APPLICANT:  Fach, Ina
;  TITLE OF INVENTION: Improved methods and means for delivering inhibitory RNA to plan
;  TITLE OF INVENTION:  applications thereof
;  FILE REFERENCE: FKOMOD
;  CURRENT APPLICATION NUMBER: US/10/321,434
;  CURRENT FILING DATE:  2002-12-18
;  NUMBER OF SEQ ID NOS: 18
;  SOFTWARE: PatentIn version 3.0
; SEQ ID NO 7
;   LENGTH: 6355
;   TYPE: DNA
;   ORGANISM: Artificial
;   FEATURE:
;   OTHER INFORMATION: cDNA sequence of the genome of TMV-U2
US-10-321-434-7

  Query Match             100.0%;  Score 6355;  DB 15;  Length 6355;
  Best Local Similarity   100.0%;  Pred. No. 0;
  Matches 6355;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 GATGTTTTAATAGTTTTCGACAACAACAATTAAAACAAAAACAACATATTACAAACAACA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
```

```
Db          1 GATGTTTTAATAGTTTTCGACAACAACAATTAAAACAAAAACAACATATTACAAACAACA 60

Qy         61 AACAACAACAATGGCACACATACAATCTATAATTAGCAACGCCCTTCTTGAAAGCGTGAG 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 AACAACAACAATGGCACACATACAATCTATAATTAGCAACGCCCTTCTTGAAAGCGTGAG 120

Qy        121 TGGTAAAAACACTCTCGTTAATGACCTTGCAAGAAGGCGCATGTACGATACGGCCGTGGA 180
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        121 TGGTAAAAACACTCTCGTTAATGACCTTGCAAGAAGGCGCATGTACGATACGGCCGTGGA 180

Qy        181 AGAATTTAACGCCCGCGACCGTAGACCAAAGGTCAACTTTTCCAAAACTATTAGCGAAGA 240
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        181 AGAATTTAACGCCCGCGACCGTAGACCAAAGGTCAACTTTTCCAAAACTATTAGCGAAGA 240

Qy        241 GCAAACGCTTCTAGTCTCCAACGCGTACCCGGAGTTCCAGATTACCTTTTATAATACTCA 300
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        241 GCAAACGCTTCTAGTCTCCAACGCGTACCCGGAGTTCCAGATTACCTTTTATAATACTCA 300

Qy        301 AAATGCCGTACACAGTTTGGCTGGAGGTTTGAGAGCATTAGAATTGGAATATCTGATGCT 360
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        301 AAATGCCGTACACAGTTTGGCTGGAGGTTTGAGAGCATTAGAATTGGAATATCTGATGCT 360

Qy        361 ACAAGTTCCCTATGGATCGCCGACATATGATATAGGTGGGAACTTTGCAGCACATTTGTT 420
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        361 ACAAGTTCCCTATGGATCGCCGACATATGATATAGGTGGGAACTTTGCAGCACATTTGTT 420

Qy        421 CAAAGGCAGGGATTACGTGCATTGCTGTATGCCCAATCTGGACATACGAGATATAATGAG 480
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        421 CAAAGGCAGGGATTACGTGCATTGCTGTATGCCCAATCTGGACATACGAGATATAATGAG 480

Qy        481 GCACGAAGGACAAAAGGACTCAATTGAGATGTATTTGTCCAGATTGTCTCGTTCTAACAA 540
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        481 GCACGAAGGACAAAAGGACTCAATTGAGATGTATTTGTCCAGATTGTCTCGTTCTAACAA 540

Qy        541 GGTAATTCCTGAGTTTCAAAGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAAGT 600
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        541 GGTAATTCCTGAGTTTCAAAGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAAGT 600

Qy        601 CTGCTGCTCTAAAACTTTTCAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGAAG 660
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        601 CTGCTGCTCTAAAACTTTTCAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGAAG 660

Qy        661 ATACGCTGTTGCTCTGCACAGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCGTT 720
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        661 ATACGCTGTTGCTCTGCACAGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCGTT 720

Qy        721 AATATCTAAGAATATACATGTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTACT 780
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        721 AATATCTAAGAATATACATGTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTACT 780

Qy        781 AGACCAGACGGAGGTTACGCTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGATGA 840
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        781 AGACCAGACGGAGGTTACGCTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGATGA 840

Qy        841 TGTTTCTTTTTTCTTTGCTGATGAAAGTACTTTAAATTATAGTCATAAATACAAAAATAT 900
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        841 TGTTTCTTTTTTCTTTGCTGATGAAAGTACTTTAAATTATAGTCATAAATACAAAAATAT 900

Qy        901 CTTGCATTATGTAGTTAAATCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAGGA 960
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        901 CTTGCATTATGTAGTTAAATCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAGGA 960

Qy        961 ATTTTTAGTCACTAGGGTTAATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTATAT 1020
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        961 ATTTTTAGTCACTAGGGTTAATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTATAT 1020

Qy       1021 TCTGTACAAGAGTGTTAGACAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATGGA 1080
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1021 TCTGTACAAGAGTGTTAGACAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATGGA 1080

Qy       1081 AGACGCCTTTGCTTACAAGAAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTTAG 1140
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1081 AGACGCCTTTGCTTACAAGAAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTTAG 1140

Qy       1141 AGACACGGCTTCGGTTAACTTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCGCT 1200
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1141 AGACACGGCTTCGGTTAACTTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCGCT 1200

Qy       1201 GTTTGAGGGTTCTATTACCAGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGTGA 1260
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1201 GTTTGAGGGTTCTATTACCAGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGTGA 1260

Qy       1261 CTTCGTTTACACAGTGCTTAATCATATCAGAACATATCAAGCCAAAGCGTTAACTTACCA 1320
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1261 CTTCGTTTACACAGTGCTTAATCATATCAGAACATATCAAGCCAAAGCGTTAACTTACCA 1320

Qy       1321 GAACGTATTATCTTTCGTGGAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACTGC 1380
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1321 GAACGTATTATCTTTCGTGGAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACTGC 1380

Qy       1381 TAGGTCTGAATGGGATGTAGATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTCTT 1440
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1381 TAGGTCTGAATGGGATGTAGATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTCTT 1440

Qy       1441 GCAGACTAAGCTGGCTGCGCTTCAAGACGATATAGTAATGGGAAAGTTTCGGTGCTTGGA 1500
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1441 GCAGACTAAGCTGGCTGCGCTTCAAGACGATATAGTAATGGGAAAGTTTCGGTGCTTGGA 1500

Qy       1501 TAAGACCACTTCTGAACTTATTTGGGATGAGGTGGGCAAATTTTTTGGAAACGTTTTCCC 1560
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1501 TAAGACCACTTCTGAACTTATTTGGGATGAGGTGGGCAAATTTTTTGGAAACGTTTTCCC 1560

Qy       1561 CACTATCAAAGAGAGATTGGTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTGAA 1620
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1561 CACTATCAAAGAGAGATTGGTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTGAA 1620

Qy       1621 GATCAAGATCCCAGATCTGTATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACCAA 1680
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1621 GATCAAGATCCCAGATCTGTATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACCAA 1680

Qy       1681 GTCTGAGGAGTTACCGCATCTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATGTA 1740
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1681 GTCTGAGGAGTTACCGCATCTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATGTA 1740

Qy       1741 CGACGCGTTATCAGAATTATCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAGTT 1800
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1741 CGACGCGTTATCAGAATTATCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAGTT 1800

Qy       1801 CAAAGACATGTGCAAGGCTTTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTTGC 1860
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1801 CAAAGACATGTGCAAGGCTTTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTTGC 1860

Qy       1861 AGTGGCCGAGAATAGAAGCGGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAATGT 1920
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1861 AGTGGCCGAGAATAGAAGCGGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAATGT 1920

Qy       1921 GGCTAAGGCTCTTAAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCGACATCCGA 1980
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1921 GGCTAAGGCTCTTAAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCGACATCCGA 1980

Qy       1981 AGAGGTGAACGTAAATAAATTTTCTATTGCTGAGAAAGGGAGATTGCCTGTGTGTGCAGA 2040
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1981 AGAGGTGAACGTAAATAAATTTTCTATTGCTGAGAAAGGGAGATTGCCTGTGTGTGCAGA 2040

Qy       2041 AAGTCATGGTTTGACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTCAACGATTT 2100
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       2041 AAGTCATGGTTTGACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTCAACGATTT 2100

Qy       2101 CCATAAGGCTTGCGTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTCTACACTGG 2160
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       2101 CCATAAGGCTTGCGTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTCTACACTGG 2160

Qy       2161 CTCACTCAAAGTTCAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCGTTGTCCGC 2220
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       2161 CTCACTCAAAGTTCAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCGTTGTCCGC 2220
```

```
Qy       2221 CACTGTATCAAATCTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCTGATTCCAG 2280
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       2221 CACTGTATCAAATCTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCTGATTCCAG 2280

Qy       2281 GGAGAAAGTTGGTGTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCTGCGGCCAA 2340
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       2281 GGAGAAAGTTGGTGTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCTGCGGCCAA 2340

Qy       2341 AGGTCATTCATGGGGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCACTTCTATC 2400
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       2341 AGGTCATTCATGGGGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCACTTCTATC 2400

Qy       2401 TTATGAAGGAGATAGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTATCATCTGA 2460
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       2401 TTATGAAGGAGATAGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTATCATCTGA 2460

Qy       2461 TACAATGGTATATTCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATGAGAGACGG 2520
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       2461 TACAATGGTATATTCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATGAGAGACGG 2520

Qy       2521 TGAACCCCACGAACCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGTTGTGGAAA 2580
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       2521 TGAACCCCACGAACCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGTTGTGGAAA 2580

Qy       2581 GTACAAAGGAGATTTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTTCCTGGAAA 2640
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       2581 GTACAAAGGAGATTTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTTCCTGGAAA 2640

Qy       2641 ACAAGCTGCTGCTATGATCAGAAGAAGGGCTAATTCATCTGGACTGATAAGAGCCACAAT 2700
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       2641 ACAAGCTGCTGCTATGATCAGAAGAAGGGCTAATTCATCTGGACTGATAAGAGCCACAAT 2700

Qy       2701 GGACAATGTGAGAACGGTAGATTCACTTCTAATGCATCCAAAACCGCGATCACACAAGAG 2760
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       2701 GGACAATGTGAGAACGGTAGATTCACTTCTAATGCATCCAAAACCGCGATCACACAAGAG 2760

Qy       2761 GCTTTTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTTAACTTCCTGGTGCTTAT 2820
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       2761 GCTTTTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTTAACTTCCTGGTGCTTAT 2820

Qy       2821 CTCTGGTTGCGACATCGCATACATTTACGGAGATACACAGCAGATTCCTTTCATTAACAG 2880
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       2821 CTCTGGTTGCGACATCGCATACATTTACGGAGATACACAGCAGATTCCTTTCATTAACAG 2880

Qy       2881 AGTTCAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAAGTGGATGAAGTTGAGAT 2940
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       2881 AGTTCAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAAGTGGATGAAGTTGAGAT 2940

Qy       2941 GAGGAGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTCCTACAATCGAAGTACGA 3000
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       2941 GAGGAGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTCCTACAATCGAAGTACGA 3000

Qy       3001 AGGAGCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCATCTGAGATGATAGGCGG 3060
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       3001 AGGAGCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCATCTGAGATGATAGGCGG 3060

Qy       3061 TAAGGGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGGAAAATTGTAACTTTCACTCA 3120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       3061 TAAGGGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGGAAAATTGTAACTTTCACTCA 3120

Qy       3121 GGCTGATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTGAACACCGTTCATGAGAT 3180
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       3121 GGCTGATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTGAACACCGTTCATGAGAT 3180

Qy       3181 CCAAGGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACGGCAACTCCACTGACTCT 3240
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       3181 CCAAGGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACGGCAACTCCACTGACTCT 3240

Qy       3241 GATTTCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGACACACAAAGAGCTTCAA 3300
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       3241 GATTTCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGACACACAAAGAGCTTCAA 3300

Qy       3301 ATATTACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGTGATTTGTCTTCTTTAAG 3360
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       3301 ATATTACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGTGATTTGTCTTCTTTAAG 3360

Qy       3361 CTCCTTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGATAGCAATTACAGATGGA 3420
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       3361 CTCCTTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGATAGCAATTACAGATGGA 3420

Qy       3421 TGCAGTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAATCAGGAGACTTTCCAGA 3480
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       3421 TGCAGTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAATCAGGAGACTTTCCAGA 3480

Qy       3481 TCTACAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACTATACTTAACAAGTATGA 3540
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       3481 TCTACAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACTATACTTAACAAGTATGA 3540

Qy       3541 TGCTGTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAGGATTGTGTTCTTGATTT 3600
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       3541 TGCTGTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAGGATTGTGTTCTTGATTT 3600

Qy       3601 TTCCAAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTAGAGCCAGTTTTGCGTAC 3660
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       3601 TTCCAAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTAGAGCCAGTTTTGCGTAC 3660

Qy       3661 CGCGGCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTGGTTGCAATGATTAAAAG 3720
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       3661 CGCGGCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTGGTTGCAATGATTAAAAG 3720

Qy       3721 AAATTTCAACGCACCAGACCTGACGGGGACGATTGACATTGAGAGCACCGCATCTGTTGT 3780
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       3721 AAATTTCAACGCACCAGACCTGACGGGGACGATTGACATTGAGAGCACCGCATCTGTTGT 3780

Qy       3781 AGTAGATAAGTTTTTTGATAGCTATTTTATTAAAAAAGAAAAATACACAAAAAATATTGC 3840
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       3781 AGTAGATAAGTTTTTTGATAGCTATTTTATTAAAAAAGAAAAATACACAAAAAATATTGC 3840

Qy       3841 TGGAGTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAACAGGAAAGAAGTACTATT 3900
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       3841 TGGAGTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAACAGGAAAGAAGTACTATT 3900

Qy       3901 GGACGACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATCGATCAGTACAAGCACAT 3960
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       3901 GGACGACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATCGATCAGTACAAGCACAT 3960

Qy       3961 GATCAAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAGAATGAATACCCTGCTCT 4020
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       3961 GATCAAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAGAATGAATACCCTGCTCT 4020

Qy       4021 GCAAACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTGGCCGGTTTCTCAGAGCT 4080
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       4021 GCAAACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTGGCCGGTTTCTCAGAGCT 4080

Qy       4081 TACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTTCTTTTCTTTACTAGGAAAAC 4140
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       4081 TACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTTCTTTTCTTTACTAGGAAAAC 4140

Qy       4141 TCCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCGCACGTTCCTATGGATGTGTT 4200
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       4141 TCCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCGCACGTTCCTATGGATGTGTT 4200

Qy       4201 AGAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAGTTTCATTGTGCTGTAGAGTA 4260
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       4201 AGAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAGTTTCATTGTGCTGTAGAGTA 4260

Qy       4261 TGAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCCGAAGTGTGGAAACAAGGGCA 4320
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       4261 TGAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCCGAAGTGTGGAAACAAGGGCA 4320

Qy       4321 CAGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAGACATGTCTGTGGTATCAAAG 4380
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       4321 CAGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAGACATGTCTGTGGTATCAAAG 4380

Qy       4381 GAAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTTATAATAGCAGCTTGCTTGGG 4440
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
```

```
Db     4381 GAAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTTATAATAGCAGCTTGCTTGGG 4440

Qy     4441 TTCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTTTGTGGAGACGATTCCGTTTT 4500
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     4441 TTCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTTTGTGGAGACGATTCCGTTTT 4500

Qy     4501 GTATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCATGTGCTAATCTCATGTGGAA 4560
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     4501 GTATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCATGTGCTAATCTCATGTGGAA 4560

Qy     4561 TTTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTTTGTGGTAGATACATCATACA 4620
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     4561 TTTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTTTGTGGTAGATACATCATACA 4620

Qy     4621 CCATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAGTTGATCTCCAAACTTGGGGC 4680
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     4621 CCATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAGTTGATCTCCAAACTTGGGGC 4680

Qy     4681 AAAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGGGTGTCTTTGTGCGATGTTGC 4740
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     4681 AAAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGGGTGTCTTTGTGCGATGTTGC 4740

Qy     4741 TTGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTGAACGCAGCTATCAAGGAGGT 4800
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     4741 TTGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTGAACGCAGCTATCAAGGAGGT 4800

Qy     4801 TCATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGTGTTAACAAATTTTTGTGTGA 4860
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     4801 TCATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGTGTTAACAAATTTTTGTGTGA 4860

Qy     4861 TAAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAGTCTCAGAGATACTGTCAAAA 4920
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     4861 TAAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAGTCTCAGAGATACTGTCAAAA 4920

Qy     4921 TTAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACTTCCGGCATTCATGACTAAGG 4980
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     4921 TTAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACTTCCGGCATTCATGACTAAGG 4980

Qy     4981 TCAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGCTGTTAAGAATGATAGTCTTT 5040
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     4981 TCAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGCTGTTAAGAATGATAGTCTTT 5040

Qy     5041 CTGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAAAGGGTATGTGTGCTTAGCTG 5100
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     5041 CTGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAAAGGGTATGTGTGCTTAGCTG 5100

Qy     5101 ATTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTGCCGTGGTGGTGTCAGTGTTT 5160
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     5101 ATTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTGCCGTGGTGGTGTCAGTGTTT 5160

Qy     5161 GTATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAACGCTGGGTGCGTATCACGCCC 5220
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     5161 GTATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAACGCTGGGTGCGTATCACGCCC 5220

Qy     5221 CTGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAATTATTCAATAACATCCGAGG 5280
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     5221 CTGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAATTATTCAATAACATCCGAGG 5280

Qy     5281 ATGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAAAGGAGTGGCTATGGAAGAAG 5340
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     5281 ATGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAAAGGAGTGGCTATGGAAGAAG 5340

Qy     5341 GATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGTAGTACATAAAAATAATGTAA 5400
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     5341 GATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGTAGTACATAAAAATAATGTAA 5400

Qy     5401 GAAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGGCTCGCCAATTGAACTCACTG 5460
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     5401 GAAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGGCTCGCCAATTGAACTCACTG 5460

Qy     5461 AAAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGCTGTGAAACTCGAAAAGGTTC 5520
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     5461 AAAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGCTGTGAAACTCGAAAAGGTTC 5520

Qy     5521 CGGAAAACAAAAAAGAAATGGTAGGTAATAATGTTAATAATAAGAAAATAAATAACAGTG 5580
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     5521 CGGAAAACAAAAAAGAAATGGTAGGTAATAATGTTAATAATAAGAAAATAAATAACAGTG 5580

Qy     5581 GTAAGAAGGGTTTTAAAATTGAGGAAATTGAGGATAATGTAAGTGATGACGAGTCTATCG 5640
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     5581 GTAAGAAGGGTTTTAAAATTGAGGAAATTGAGGATAATGTAAGTGATGACGAGTCTATCG 5640

Qy     5641 CGTCATCGAGTACGTTTTAATCAATATGCCTTATACAATCAACTCTCCGAGCCAATTTGT 5700
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     5641 CGTCATCGAGTACGTTTTAATCAATATGCCTTATACAATCAACTCTCCGAGCCAATTTGT 5700

Qy     5701 TTACTTATCTTCCGCTTACGCAGATCCTGTGCAGCTGATCAATCTGTGTACAAATGCATT 5760
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     5701 TTACTTATCTTCCGCTTACGCAGATCCTGTGCAGCTGATCAATCTGTGTACAAATGCATT 5760

Qy     5761 GGGTAACCAGTTTCAAACGCAACAAGCTAGGACAACAGTCCAACAGCAATTTGCGGATGC 5820
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     5761 GGGTAACCAGTTTCAAACGCAACAAGCTAGGACAACAGTCCAACAGCAATTTGCGGATGC 5820

Qy     5821 CTGGAAACCTGTGCCTAGTATGACAGTGAGATTTCCTGCATCGGATTTCTATGTGTATAG 5880
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     5821 CTGGAAACCTGTGCCTAGTATGACAGTGAGATTTCCTGCATCGGATTTCTATGTGTATAG 5880

Qy     5881 ATATAATTCGACGCTTGATCCGTTGATCACGGCGTTATTAAATAGCTTTGATACTAGAAA 5940
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     5881 ATATAATTCGACGCTTGATCCGTTGATCACGGCGTTATTAAATAGCTTTGATACTAGAAA 5940

Qy     5941 TAGAATAATAGAGGTTGATAATCAACCCGCACCGAATACTACTGAAATCGTTAACGCGAC 6000
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     5941 TAGAATAATAGAGGTTGATAATCAACCCGCACCGAATACTACTGAAATCGTTAACGCGAC 6000

Qy     6001 TCAGAGGGTAGACGATGCTACTGTAGCTATAAGGGCTTCAATCAATAATTTGGCTAATGA 6060
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     6001 TCAGAGGGTAGACGATGCTACTGTAGCTATAAGGGCTTCAATCAATAATTTGGCTAATGA 6060

Qy     6061 ACTGGTTCGTGGAACTGGCATGTTCAATCAAGCAGGCTTTGAGACTGCTAGTGGACTTGT 6120
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     6061 ACTGGTTCGTGGAACTGGCATGTTCAATCAAGCAGGCTTTGAGACTGCTAGTGGACTTGT 6120

Qy     6121 CTGGACCACAACTCCGGCTACTTAGCTATTGTTGTGAGATTTCCTAAAATAAAGTCGCTG 6180
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     6121 CTGGACCACAACTCCGGCTACTTAGCTATTGTTGTGAGATTTCCTAAAATAAAGTCGCTG 6180

Qy     6181 AAGACTTAAAATTCAGGGTGGCTGATACCAAAATCAGCAGTGGTTGTTCGTCCACTTAAA 6240
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     6181 AAGACTTAAAATTCAGGGTGGCTGATACCAAAATCAGCAGTGGTTGTTCGTCCACTTAAA 6240

Qy     6241 TATAACGATTGTCATATCTGGATCCAACAGTTAAACCATGTGATGGTGTATACTGTGGTA 6300
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     6241 TATAACGATTGTCATATCTGGATCCAACAGTTAAACCATGTGATGGTGTATACTGTGGTA 6300

Qy     6301 TGGCGTAAAACATCGGAGAGGTTCGAATCCTCCCCTAACCGCCGGTAGCGGCCCA 6355
            |||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     6301 TGGCGTAAAACATCGGAGAGGTTCGAATCCTCCCCTAACCGCCGGTAGCGGCCCA 6355
```

```
RESULT 2
US-09-962-527-1
; Sequence 1, Application US/09962527
; Publication No. US20030049813A1
;   GENERAL INFORMATION:
;        APPLICANT: GARGER, STEPHEN
;                   HOLTZ, R. BARRY
;                   McCULLOCH, MICHAEL
;                   TURPEN, THOMAS
;        TITLE OF INVENTION: A PROCESS FOR ISOLATING AND
;                            PURIFYING VIRUSES SOLUBLE PROTEINS AND PEPTIDES
;                            FROM PLANT SOURCES
;        NUMBER OF SEQUENCES: 5
;        CORRESPONDENCE ADDRESS:
;             ADDRESSEE: Howrey & Simon
```

```
;            STREET: 1299 Pennsylvania Avenue N.W.
;            CITY: Washington
;            STATE: DC
;            COUNTRY: USA
;            ZIP: 20004
;        COMPUTER READABLE FORM:
;            MEDIUM TYPE: Diskette
;            COMPUTER: IBM Compatible
;            OPERATING SYSTEM: DOS
;            SOFTWARE: FastSEQ for Windows Version 2.0
;        CURRENT APPLICATION DATA:
;            APPLICATION NUMBER: US/09/962,527
;            FILING DATE: 24-Sep-2001
;            CLASSIFICATION: <Unknown>
;        PRIOR APPLICATION DATA:
;            APPLICATION NUMBER: 09/037,751
;            FILING DATE: 10-march-1998
;        ATTORNEY/AGENT INFORMATION:
;            NAME: Halluin, Albert P
;            REGISTRATION NUMBER: 25,277
;            REFERENCE/DOCKET NUMBER: 00801.0140.999
;        TELECOMMUNICATION INFORMATION:
;            TELEPHONE: 650-463-8109
;            TELEFAX: 650-463-8400
;            TELEX: <Unknown>
;    INFORMATION FOR SEQ ID NO: 1:
;        SEQUENCE CHARACTERISTICS:
;            LENGTH: 6395 base pairs
;            TYPE: nucleic acid
;            STRANDEDNESS: single
;            TOPOLOGY: unknown
;        MOLECULE TYPE: Genomic RNA
;        SEQUENCE DESCRIPTION: SEQ ID NO: 1:
US-09-962-527-1

  Query Match             38.8%;  Score 2468;  DB 10;  Length 6395;
  Best Local Similarity   44.6%;  Pred. No. 0;
  Matches 2851;  Conservative 1173;  Mismatches 2300;  Indels   66;  Gaps   11;

Qy           20 ACAACAACAATTAAAACAAAAACAACATATTACAAACAACAAACAACAACAATGGCACAC 79
                || |  |  |  |||  | ||||||||:   |   || |   ||||  ||||:|||| ||
Db           18 ACCAACAACAACAAACAACAAACAACAUUACAAUUACUAUUUACAAUUACAAUGGCAUAC 77

Qy           80 ATACAATCTATAATTAGCAACGCCCTTCTTGAAAGCGTGAGTGGTAAAAACACTCTCGTT 139
                | |||  |    |  |     ||  : |: || |  |:  | || || ||| |  : |:
Db           78 ACACAGACAGCUACCACAUCAGCUUUGCUGGACACUGUCCGAGGAAACAACUCCUUGGUC 137

Qy          140 AATGACCTTGCAAGAAGGCGCATGTACGATACGGCCGTGGAAGAATTTAACGCCCGCGAC 199
                ||:|| |: ||||   | ||  : :|||| || || |: ||||| :::||||| || |||
Db          138 AAUGAUCUAGCAAAGCGUCGUCUUUACGACACAGCGGUUGAAGAGUUUAACGCUCGUGAC 197

Qy          200 CGTAGACCAAAGGTCAACTTTTCCAAAACTATTAGCGAAGAGCAAACGCTTCTAGTCTCC 259
                || || || ||||: |||::::| |||   |: ||||| ||||| ||||:: : |   ||
Db          198 CGCAGGCCCAAGGUGAACUUUUCAAAAGUAAUAAGCGAGGAGCAGACGCUUAUUGCUACC 257

Qy          260 AACGCGTACCCGGAGTTCCAGATTACCTTTTATAATACTCAAAATGCCGTACACAGTTTG 319
                   |||:| || || ::||| |::|| ::::|:|| || |||||:||||: ||     :
Db          258 CGGGCGUAUCCAGAAUUCCAAAUUACAUUUUAUAACACGCAAAAUGCCGUGCAUUCGCUU 317

Qy          320 GCTGGAGGTTTGAGAGCATTAGAATTGGAATATCTGATGCTACAAGTTCCCTATGGATCG 379
                || || || ::| || | ::|||| :||||:|:|:||:| : ||| ::|||:| |||:|
Db          318 GCAGGUGGAUUGCGAUCUUUAGAACUGGAAUAUCUGAUGAUGCAAAUUCCCUACGGAUCA 377

Qy          380 CCGACATATGATATAGGTGGGAACTTTGCAGCACATTTGTTCAAAGGCAGGGATTACGTG 439
                  ||| :|:|| |:||| ||||| :::||| | ||: :|::||| ||  | |  :| |:
Db          378 UUGACUUAUGACAUAGGCGGGAAUUUUGCAUCGCAUCUGUUCAAGGGACGAGCAUAUGUA 437

Qy          440 CATTGCTGTATGCCCAATCTGGACATACGAGATATAATGAGGCACGAAGGACAAAAGGAC 499
                || :||:| |:|||||| |:|||| : ||||| |: |:| |||||||||| || || |||
Db          438 CACUGCUGCAUGCCCAACCUGGACGUUCGAGACAUCAUGCGGCACGAAGGCCAGAAAGAC 497

Qy          500 TCAATTGAGATGTATTTGTCCAGATTGTCTCGTTCTAACAAGGTAATTCCTGAGTTTCAA 559
                   |::||  : :|  : :| ||  :     |       ||   | : ||  | :: |||
Db          498 AGUAUUGAACUAUACCUUUCUAGGCUAGAGAGAGGGGGGAAAACAGUCCCCAACUUCCAA 557

Qy          560 AGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAAGTCTGCTGCTCTAAAACTTTT 619
                | ||| || ::: |||| :| ||||||  :||  | || |    |:|    || ||:::
Db          558 AAGGAAGCAUUUGACAGAUACGCAGAAAUUCCUGAAGACGCUGUCUGUCACAAUACUUUC 617

Qy          620 CAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGAAGATACGCTGTTGCTCTGCAC 679
                |||      |||   || |||    || |    || |||   :| ||  ::|| |: |||
Db          618 CAGACAAUGCGACAUCAGCCGAUGCAGCAAUCAGGCAGAGUGUAUGCCAUUGCGCUACAC 677

Qy          680 AGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCGTTAATATCTAAGAATATACAT 739
                ||  : :|:|| |: || |   |:|||:: || || ||  :  :    || ||: : ||:
Db          678 AGCAUAUAUGACAUACCAGCCGAUGAGUUCGGGGCGGCACUCUUGAGGAAAAAUGUCCAU 737

Qy          740 GTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTACTAGACCAGACGGAGGTTACG 799
                   :| :|:|| ||:: |   ::  | ||     :  : |: ||  |  |  | |: |
Db          738 ACGUGCUAUGCCGCUUUCCACUUCUCCGAGAACCUGCUUCUUGAAGAUUCAUACGUCAAU 797

Qy          800 CTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGATGATGTTTCTTTTTTCTTTGCT 859
                 :  | ||||:   |||   :::     | || || ||  |  :  | ::::  :::||
Db          798 UUGGACGAAAUCAACGCGUGUUUUUCGCGCGAUGGAGACAAGUUGACCUUUUCUUUUGCA 857

Qy          860 GATGAAAGTACTTTAAATTATAGTCATAAATACAAAAATATCTTGCATTATGTAGTTAAA 919
                   || ||:||: : ||::|: |:||:|  :|    ||:|:  :  | :|:|:    |||
Db          858 UCAGAGAGUACUCUUAAUUAUUGUCAUAGUUAUUCUAAUAUUCUUAAGUAUGUGUGCAAA 917

Qy          920 TCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAGGAATTTTTAGTCACTAGGGTT 979
                 |::||:: || || :|:| :|||   |:::|| : ||||| :::::||:||| || |::
Db          918 ACUUACUUCCCGGCCUCUAAUAGAGAGGUUUACAUGAAGGAGUUUUUAGUCACCAGAGUU 977

Qy          980 AATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTATATTCTGTACAAGAGTGTTAGA 1039
                ||:|| :||::::|:|| ::: | | | :|||:|| : : :: :|:||||  |:|:
Db          978 AAUACCUGGUUUUGUAAGUUUUCUAGAAUAGAUACUUUUCUUUUGUACAAAGGUGUGGCC 1037

Qy         1040 CAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATGGAAGACGCCTTTGCTTACAAG 1099
                ||   | |    ||:||:|| |||:: :|:   || |:||||||||| :    ::||||
Db         1038 CAUAAAAGUGUAGAUAGUGAGCAGUUUUAUACUGCAAUGGAAGACGCAUGGCAUUACAAA 1097

Qy         1100 AAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTTAGAGACACGGCTTCGGTTAAC 1159
                || ||  : || |:|: |||||  || |||    :| ::   ||  |  | :| |: ||
Db         1098 AAGACUCUUGCAAUGUGCAACAGCGAGAGAAUCCUCCUUGAGGAUUCAUCAUCAGUCAAU 1157

Qy         1160 TTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCGCTGTTTGAGGGTTCTATTACC 1219
                :  :||:: || || |:|| ||| |:||: |: |:|||  : :: ||   ::|: :
Db         1158 UACUGGUUUCCCAAAAUGAGGGAUAUGGUCAUCGUACCAUUAUUCGACAUUUCUUUGGAG 1217

Qy         1220 AGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGTGACTTCGTTTACACAGTGCTT 1279
                |  |  |||| |||  | |  || |:| : |:       || ::||: :  ||||:||::
Db         1218 ACUAGUAAGAGGACGCGCAAGGAAGUCUUAGUGUCCAAGGAUUUCGUGUUUACAGUGCUU 1277

Qy         1280 AATCATATCAGAACATATCAAGCCAAAGCGTTAACTTACCAGAACGTATTATCTTTCGTG 1339
                || || |:  |||||:| || || |||||  : || :||   || |: :: :|  : |:
Db         1278 AACCACAUUCGAACAUACCAGGCGAAAGCUCUUACAUACGCAAAUGUUUUGUCCCUUGUC 1337

Qy         1340 GAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACTGCTAGGTCTGAATGGGATGTA 1399
                || :| |:  ||:|  | |: |: |: || ||:|: || || |||:| |||:||||:|:
Db         1338 GAAUCGAUUCGAUCGAGGGUAAUCAUUAACGGUGUGACAGCGAGGUCCGAAUGGGAUGUG 1397

Qy         1400 GATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTCTTGCAGACTAAGCTGGCTGCG 1459
                || ||| |  :  : ||| ||::|:| |:||| :: : | :||| ||:||||: || |
Db         1398 GACAAAUCUUUGUUACAAUCCUUGUCCAUGACGUUUUACCUGCAUACUAAGCUUGCCGUU 1457

Qy         1460 CTTCAAGACGATATAGTAATGGGAAAGTTTCGGTGCTTGGATAAGACCACTTCTGAACTT 1519
                |:  | || ||  :| : |:  | |||::: |   |      || ||    :   | | :
Db         1458 CUAAAGGAUGACUUACUGAUUAGCAAGUUUAGUCUCGGUUCGAAAACGGUGUGCCAGCAU 1517

Qy         1520 ATTTGGGATGAGGTGGGCAAATTTTTTGGAAACGTTTTCCCCACTATCAAAGAGAGATTG 1579
                 : :||||:|||| :          :::|| ||||  :: ||| |  : ||||||||| :
Db         1518 GUGUGGGAUGAGAUUUCGCUGGCGUUUGGGAACGCAUUUCCCUCCGUGAAAGAGAGACUC 1577

Qy         1580 GTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTGAAGATCAAGATCCCAGATCTG 1639
                 :|| ||||||| :: :    |:    |   | ||  :  |||:|| | : || ||:|:
Db         1578 UUGAACAGGAAACUUAUCAGAGUGGCAGGCGACGCAUUAGAGAUCAGGGUGCCUGAUCUA 1637
```

```
Qy       1640 TATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACCAAGTCTGAGGAGTTACCGCAT 1699
              :|:|: || :   | ||||| :: |:  |:|| :|||     :|:| |||  : ||
Db       1638 UAUGUGACCUUCCACGACAGAUUAGUGACUGAGUACAAGGCCUCUGUGGACAUGCCUGCG 1697

Qy       1700 CTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATGTACGACGCGTTATCAGAATTA 1759
              |: || |: | |||| |  : |||||| | ||    |:|:|| | ||  : :|||| ::|
Db       1698 CUUGACAUUAGGAAGAAGAUGGAAGAAACGGAAGUGAUGUACAAUGCACUUUCAGAGUUA 1757

Qy       1760 TCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAGTTCAAAGACATGTGCAAGGCT 1819
              :|  :  : | ||   |:|| || ::|||: : |     ::     | |:|:|| |  |:
Db       1758 UCGGUGUUAAGGGAGUCUGACAAAUUCGAUGUUGAUGUUUUUUCCCAGAUGUGCCAAUCU 1817

Qy       1820 TTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTTGCAGTGGCCGAGAATAGAAGC 1879
              :: || |::   ||      ||||||    |: |: |: || |:       ||:   |||
Db       1818 UUGGAAGUUGACCCAAUGACGGCAGCGAAGGUUAUAGUCGCGGUCAUGAGCAAUGAGAGC 1877

Qy       1880 GGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAATGTGGCTAAGGCTCT------T 1933
              ||: : ||:|: || :::||    || || |||| |||:|: ||    ||: :      :
Db       1878 GGUCUGACUCUCACAUUUGAACGACCUACUGAGGCGAAUGUUGCGCUAGCUUUACAGGAU 1937

Qy       1934 AAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCGACATCCGAAGAGGTGAACGTA 1993
               ||   | ||| :| || |  |   :     ::    | | |   |  ||  |
Db       1938 CAAGAGAAGGCUUCAGAAGGUGCAUUGGUAGUUACCUCAAGAGAAGUUGAAGAACCGUCC 1997

Qy       1994 AATAAATTTTCTATTGCTGAGAAAGGGAGATTGCCTGTGTGTGCAGAAAGTCATGGTTTG 2053
              |  ||   ::| |: ||      || |  |      |   |:   |   |  |:  :  |
Db       1998 AUGAAGGGUUCGAUGGCCAGAGGAGAGUUACAAUUAGCUGGUCUUGCUGGAGAUCAUCCG 2057

Qy       2054 ACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTCAACGATTTCCATAAGGCTTGC 2113
                |    |  | :   || || ||||| : |||:|  :  |  | :: ||:| |||
Db       2058 GAGUCGUCCUAUUCUAAGAACGAGGAGAUAGAGUCUUUAGAGCAGUUUCAUAUGGCGACG 2117

Qy       2114 GTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTCTACACTGGCTCACTCAAAGTT 2173
              |  ||:    : |::   ||||| |:|   :|| ::|: :|||| ||  |  : ||||::
Db       2118 GCAGAUUCGUUAAUUCGUAAGCAGAUGAGCUCGAUUGUGUACACGGGUCCGAUUAAAGUU 2177

Qy       2174 CAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCGTTGTCCGCCACTGTATCAAAT 2233
              || ||||:||| |||: : : || ||  :|| ||| :|  : :| ||  | |: :| ||:
Db       2178 CAGCAAAUGAAAAACUUUAUCGAUAGCCUGGUAGCAUCACUAUCUGCUGCGGUGUCGAAU 2237

Qy       2234 CTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCTGATTCCAGGGAGAAAGTTGGT 2293
              |:   ||||   |: || ||:  ||  |     :||   :||  || |  |  ||  ::||
Db       2238 CUCGUCAAGAUCCUCAAAGAUACAGCUGCUAUUGACCUUGAAACCCGUCAAAAGUUUGGA 2297

Qy       2294 GTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCTGCGGCCAAAGGTCATTCATGG 2353
              |: : |||:|:  | :  |  |||:|| :  :||||||  |||||||  |:||: ||:||
Db       2298 GUCUUGGAUGUUGCAUCUAGGAAGUGGUUAAUCAAACCAACGGCCAAGAGUCAUGCAUGG 2357

Qy       2354 GGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCACTTCTATCTTATGAAGGAGAT 2413
              || |::|:        ||  | ||||      :   || |:: :    :|:|| |   |
Db       2358 GGUGUUGUUGAAACCCACGCGAGGAAGUAUCAUGUGGCGCUUUUGGAAUAUGAUGAGCAG 2417

Qy       2414 AGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTATCATCTGATACAATGGTATAT 2473
               |  :||:|||       || :|||| || |: ||:|:    :|:||  |  : |: :|:
Db       2418 GGUGUGGUGACAUGCGAUGAUUGGAGAAGAGUAGCUGUUAGCUCUGAGUCUGUUGUUUAU 2477

Qy       2474 TCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATGAGAGACGGTGAACCCCACGAA 2533
              :| || |: || || |:|  || :|:| | | |    :  || |||| ||||| || |
Db       2478 UCCGACAUGGCGAAACUCAGAACUCUGCGCAGACUGCUUCGAAACGGAGAACCGCAUGUC 2537

Qy       2534 CCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGTTGTGGAAAGTACAAAGGAGAT 2593
                :|  ||||||| : |: |::|:||| || |: || || :|:|||||   ||||| |  :
Db       2538 AGUAGCGCAAAGGUUGUUCUUGUGGACGGAGUUCCGGGCUGUGGAAAAACCAAAGAAAUU 2597

Qy       2594 TTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTTCCTGGAAAACAAGCTGCTGCT 2653
               ::   ||  :: |: ::||:|| ||: : |: :: |: ||:|| || ||||| || |
Db       2598 CUUUCCAGGGUUAAUUUUGAUGAAGAUCUAAUUUUAGUACCUGGGAAGCAAGCCGCGGAA 2657

Qy       2654 ATGATCAGAAGAAGGGCTAATTCATCTGGACTGATAAGAGCCACAATGGACAATGTGAGA 2713
              |:||:||||||| | || ||::| :| ||  : |:    ||||| | |||||| |: | |
Db       2658 AUGAUCAGAAGACGUGCGAAUUCCUCAGGGAUUAUUGUGGCCACGAAGGACAACGUUAAA 2717

Qy       2714 ACGGTAGATTCACTTCTAATGCAT---------CCAAAACCGCGATCACACAAGAGGCTT 2764
              || |: ||::|  :  : |:| |:            | ||   |      ||||||| :
Db       2718 ACCGUUGAUUCUUUCAUGAUGAAUUUUGGGAAAAGCACACGCUGUCAGUUCAAGAGGUUA 2777

Qy       2765 TTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTTAACTTCCTGGTGCTTATCTCT 2824
              :: |::||:||||||::||:| :||| || ||::|:|::|| :: |: |:|   |: :|
Db       2778 UUCAUUGAUGAAGGGUUGAUGUUGCAUACUGGUUGUGUUAAUUUUCUUGUGGCGAUGUCA 2837

Qy       2825 GGTTGCGACATCGCATACATTTACGGAGATACACAGCAGATTCCTTTCATTAACAGAGTT 2884
                 :|||| |: |||:|  :::||||||| ||||||||||::|| : ||:  || ||||::
Db       2838 UUGUGCGAAAUUGCAUAUGUUUACGGAGACACACAGCAGAUUCCAUACAUCAAUAGAGUU 2897

Qy       2885 CAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAAGTGGATGAAGTTGAGATGAGG 2944
                    ::||||:| |||    ||::::|  ||  :| |||: || || |: ||||   |
Db       2898 UCAGGAUUCCCGUACCCCGCCCAUUUUGCCAAAUUGGAAGUUGACGAGGUGGAGACACGC 2957

Qy       2945 AGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTCCTACAATCGAAGTACGAAGGA 3004
              || || || |:  | :| ||||  ||:|:|    ::  |:  |   ||  :| || ||
Db       2958 AGAACUACUCUCCGUUGUCCAGCCGAUGUCACACAUUAUCUGAACAGGAGAUAUGAGGGC 3017

Qy       3005 GCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCATCTGAGATGATAGGCGGTAAG 3064
                 |: |  | |||::|  | |:  ||   :| |: :|    ||||:| : |||||
Db       3018 UUUGUCAUGAGCACUUCUUCGGUUAAAAAGUCUGUUUCGCAGGAGAUGGUCGGCGGAGCC 3077

Qy       3065 GGAGTACTAAACAGTGTTTCCAAACCACTAAAGGAAAAATTGTAACTTTCACTCAGGCT 3124
              |  |:  : ||     : :| |||||  :  | || || |:  : ||:::  || ||  |
Db       3078 GCCGUGAUCAAUCCGAUCUCAAAACCCUUGCAUGGCAAGAUCCUGACUUUUACCCAAUCG 3137

Qy       3125 GATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTGAACACCGTTCATGAGATCCAA 3184
              ||:|||   |   :        |  || :|:    |:|:  |||| |: ||:||  : |||
Db       3138 GAUAAAGAAGCUCUGCUUUCAAGAGGGUAUUCAGAUGUUCACACUGUGCAUGAAGUGCAA 3197

Qy       3185 GGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACGGCAACTCCACTGACTCTGATT 3244
              || || || :     ||:|: :| |: |: || :: ||  | || ||| :   |  : |::
Db       3198 GGCGAGACAUACUCUGAUGUUUCACUAGUUAGGUUAACCCCUACACCAGUCUCCAUCAUU 3257

Qy       3245 TCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGACACACAAAGAGCTTCAAATAT 3304
               |          ||| ||:|:: : |:|||  :| | || ||||         :||| :|
Db       3258 GCAGGAGACAGCCCACAUGUUUUGGUCGCAUUGUCAAGGCACACCUGUUCGCUCAAGUAC 3317

Qy       3305 TACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGTGATTTGTCTTCTTTAAGCTCC 3364
              :|||| |: |:  : ||:||:::||:    |: |::|| ||: :          : |||:|
Db       3318 UACACUGUUGUUAUGGAUCCUUUAGUUAGUAUCAUUAGAGAUCUAGAGAAACUUAGCUCG 3377

Qy       3365 TTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGATAGCAATTACAGATGGATGCA 3424
              : | : ::||| |:|:|:| ||: || ||||| |    |:|||||::||||||: ||  |
Db       3378 UACUUGUUAGAUAUGUAUAAGGUCGAUGCAGGAACACAAUAGCAAUUACAGAUUGACUCG 3437

Qy       3425 GTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAATCAGGAGACTTTCCAGATCTA 3484
              |:|::|||||:   ||:|:  :::|: ||| | || ||  | || ||  :: | ||: :
Db       3438 GUGUUCAAAGGUUCCAAUCUUUUUGUUGCAGCGCCAAAGACUGGUGAUAUUUCUGAUAUG 3497

Qy       3485 CAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACTATACTTAACAAGTATGATGCT 3544
              |||:: :| :| ||:   :| |:||| |||| || || |:  : || || : :||:||:
Db       3498 CAGUUUUACUAUGAUAAGUGUCUCCCAGGCAACAGCACCAUGAUGAAUAAUUUUGAUGCU 3557

Qy       3545 GTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAGGATTGTGTTCTTGATTTTTCC 3604
              |::||||:||||::   :|| | :    : ||:|: || ||::|  :  : ||: : :|
Db       3558 GUUACCAUGAGGUUGACUGACAUUUCAUUGAAUGUCAAAGAUUGCAUAUUGGAUAUGUCU 3617

Qy       3605 AAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTAGAGCCAGTTTTGCGTACCGCG 3664
              ||   : ::|    ||| |||||    |     |   |:|   ||  :  : || || |||
Db       3618 AAGUCUGUUCGUGCGCCUAAGGAUCAAAUCAAACCACUAAUACCUAUGGUACGAACGGCG 3677

Qy       3665 GCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTGGTTGCAATGATTAAAAGAAAT 3724
              || |||  |||| |     | ||||:| : |||||: : |: || |:||::||||||||
Db       3678 GCAGAAAUGCCACGCCAGACUGGACUAUUGGAAAAUUUAGUGGCGAUGAUUAAAAGAAAC 3737

Qy       3725 TTCAACGCACCAGACCTGACGGGGACGATTGACATTGAGAGCACCGCATCTGTTGTAGTA 3784
              :: ||||||||| ||  :| | || |  |::|| |::|| |  || |||:|: : |: |:|
Db       3738 UUUAACGCACCCGAGUUGUCUGGCAUCAUUGAUAUUGAAAAUACUGCAUCUUUGGUUGUA 3797

Qy       3785 GATAAGTTTTTTGATAGCTATTTTATTAAAAAAGAAAAATACACAAAAAATATTGCTGGA 3844
```

```
                 ||:|||::::::||:|| :|:::  ::||| || ||| | |  |||| || | :| :
Db          3798 GAUAAGUUUUUUGAUAGUUAUUUGCUUAAAGAAAAAAGAAAACCAAAUAAAAAUGUUUCU 3857

Qy          3845 GTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAACAGGAAAGAAGTACTATTGGAC 3904
                  :| : |  |  || :|  : |  |||:||:: |||||   | || | |:|  | : | |
Db          3858 UUGUUCAGUAGAGAGUCUCUCAAUAGAUGGUUAGAAAAGCAGGAACAGGUAACAAUAGGC 3917

Qy          3905 GACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATCGATCAGTACAAGCACATGATC 3964
                  |  : ||  | :   |::::   ||: :||| ||  : ||:|||:|||  ||||:||:
Db          3918 CAGCUCGCAGAUUUUGAUUUUGUGGAUUUGCCAGCAGUUGAUCAGUACAGACACAUGAUU 3977

Qy          3965 AAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAGAATGAATACCCTGCTCTGCAA 4024
                 || || ||||| ||||| || ::||||  ::|||: || |  || :|||| ||: :|||
Db          3978 AAAGCACAACCCAAACAAAAGUUGGACACUUCAAUCCAAACGGAGUACCCGGCUUUGCAG 4037

Qy          4025 ACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTGGCCGGTTTCTCA---GAGCTT 4081
                 || |::|: :||||::| ||  |||:||| |  |: :: | |   :: :     ||||::
Db          4038 ACGAUUGUGUACCAUUCAAAAAAGAUCAAUGCAAUAUUCGGCCCGUUGUUUAGUGAGCUU 4097

Qy          4082 ACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTTCTTTTCTTTACTAGGAAAACT 4141
                 || |||    : |: ||     ::||::| |  |  ::: : :: :: || || || ||
Db          4098 ACUAGGCAAUUACUGGACAGUGUUGAUUCGAGCAGAUUUUUGUUUUUCACAAGAAAGACA 4157

Qy          4142 CCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCGCACGTTCCTATGGATGTGTTA 4201
                 ||||  ||||:: | || :: ::|   ||:|:||||   || |: || |:||:|: : :
Db          4158 CCAGCGCAGAUUGAGGAUUUCUUCGGAGAUCUCGACAGUCAUGUGCCGAUGGAUGUCUUG 4217

Qy          4202 GAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAGTTTCATTGTGCTGTAGAGTAT 4261
                 || |:|||:|: :| || :| || || :| ||||| || :: || :|:|| |:||| :|
Db          4218 GAGCUGGAUAUAUCAAAAUACGACAAAUCUCAGAAUGAAUUCCACUGUGCAGUAGAAUAC 4277

Qy          4262 GAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCCGAAGTGTGGAAACAAGGGCAC 4321
                 || |: :||  ||||::|||: :  | || :: ::||  ||||: :|||||||||||||
Db          4278 GAGAUCUGGCGAAGAUUGGGUUUUGAAGACUUCUUGGGAGAAGUUUGGAAACAAGGGCAU 4337

Qy          4322 AGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAGACATGTCTGTGGTATCAAAGG 4381
                 || || || ||  : |||||::| |  || || |: || || :|  : :||:|:|||||
Db          4338 AGAAAGACCACCCUCAAGGAUUAUACCGCAGGUAUAAAAACUUGCAUCUGGUAUCAAAGA 4397

Qy          4382 AAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTTATAATAGCAGCTTGCTTGGGT 4441
                 || ||||| || |: || || ::||: || || ||:|: |: |: || || :| ::||
Db          4398 AAGAGCGGGGACGUCACGACGUUCAUUGGAAACACUGUGAUCAUUGCUGCAUGUUUGGCC 4457

Qy          4442 TCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTTTGTGGAGACGATTCCGTTTTG 4501
                 :| |:| : ||||:||| ||  : |: ||||| || ::::| || |||||:    :  :|
Db          4458 UCGAUGCUUCCGAUGGAGAAAAUAAUCAAAGGAGCCUUUUGCGGUGACGAUAGUCUGCUG 4517

Qy          4502 TATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCATGTGCTAATCTCATGTGGAAT 4561
                 :| :::||||||||::  || :: || ||  : ||    :  || ||:|: |:|:||||:
Db          4518 UACUUUCCAAAGGGUUGUGAGUUUCCGGAUGUGCAACACUCCGCGAAUCUUAUGUGGAAU 4577

Qy          4562 TTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTTTGTGGTAGATACATCATACAC 4621
                 :::|| || ||||:|: :| |||   |:| || :||::::| || |||:|  : |:|||
Db          4578 UUUGAAGCAAAACUGUUUAAAAAACAGUAUGGAUACUUUUGCGGAAGAUAUGUAAUACAU 4637

Qy          4622 CATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAGTTGATCTCCAAACTTGGGGCA 4681
                 || || |  |||   |: |:|:|::| ||:||  : |||::||:|:| |||::|| ||
Db          4638 CACGACAGAGGAUGCAUUGUGUAUUACGAUCCCCUAAAGUUGAUCUCGAAACUUGGUGCU 4697

Qy          4682 AAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGGGTGTCTTTGTGCGATGTTGCT 4741
                 ||||| |:||||||::  || |||:: || |||:: ||   |: : : :| ||:|::||:
Db          4698 AAACACAUCAAGGAUUGGGAACACUUGGAGGAGUUCAGAAGGUCUCUUUGUGAUGUUGCU 4757

Qy          4742 TGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTGAACGCAGCTATCAAGGAGGTT 4801
                   ::|| :    |||   :|       :   | ||| :| |||  ||: :   |||||::
Db          4758 GUUUCGUU---GAACAAUUGUGCGUAUUACACACAGUUGGACGACGCUGUAUGGGAGGUU 4814

Qy          4802 CATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGTGTTAACAAATTTTTGTGTGAT 4861
                 ||:|| |||||   :   ||::||:::| :: :||  |: :    || : :::|: :||:
Db          4815 CAUAAGACCGCCCCUCCAGGUUCGUUUGUUUAUAAAAGUCUGGUGAAGUAUUUGUCUGAU 4874

Qy          4862 AAATTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAGTCTCAGAGATACTGTCAAAAT 4921
                 ||| :: : :::|||| :::|::: :| |:|||: :   : : | ||  |  |: || |:
Db          4875 AAAGUUCUUUUUAGAAGUUUGUUUAUAGAUGGCUCUAGUUGUUAAAGGAAAAGUGAAUAU 4934

Qy          4922 TAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACTTCCGGCATTCATGACTAAGGT 4981
                  |  |||:: |: |||:  :| ||| |||   |||:  : ||| |  :  : ||    |:
Db          4935 CAAUGAGUUUAUCGACCUGUCAAAAAUGGAGAAGAUCUUACCGUCGAUGUUUACCCCUGU 4994

Qy          4982 CAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGCTGTTAAGAATGATAGTCTTTC 5041
                  |||||:|::|     :| |  |: || || |: |:|| :  : ||||:||     : :|
Db          4995 AAAGAGUGUUAUGUGUUCCAAAGUUGAUAAAAUAAUGGUUCAUGAGAAUGAGUCAUUGUC 5054

Qy          5042 TGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAAAGGGTATGTGTGCTTAGCTGA 5101
                  || |:  |  : |::||||| |::||| :  :: | |  || :| |: :| ::||| |
Db          5055 AGAGGUGAACCUUCUUAAAGGAGUUAAGCUUAUUGAUAGUGGAUACGUCUGUUUAGCCGG 5114

Qy          5102 TTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTGCCGTGGTGGTGTCAGTGTTTG 5161
                 :::||: |:  | || |||:||||  : || || || :|| | || ||:|: || |: :|
Db          5115 UUUGGUCGUCACGGGCGAGUGGAACUUGCCUGACAAUUGCAGAGGAGGUGUGAGCGUGUG 5174

Qy          5162 TATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAACGCTGGGTGCGTATCACGCCCC 5221
                 : : |: || || || |:| ||||     | || || || |: ||  | :|  || |  |
Db          5175 UCUGGUGGACAAAAGGAUGGAAAGAGCCGACGAGGCCACUCUCGGAUCUUACUACACAGC 5234

Qy          5222 TGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAATTATTCAATAACATCCGAGGA 5281
                  ||:   || || |  :::   :: ||| :  : || ||::|: | |:|||  || ||||
Db          5235 AGCUGCAAAGAAAAGAUUUCAGUUCAAGGUCGUUCCCAAUUAUGCUAUAACCACCCAGGA 5294

Qy          5282 TGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAAAGGAGTGGCTATGGAAGAAGG 5341
                  ||   |||  ||   :||||||: ::||: ||:|: | |   |:|   |:|  ||  ||
Db          5295 CGCGAUGAAAAACGUCUGGCAAGUUUUAGUUAAUAUUAGAAAUGUGAAGAUGUCAGCGGG 5354

Qy          5342 ATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGTAGTACATAAAAATAATGTAAG 5401
                  : |:|:||  : :|: :||||:: |: :|  : :|: : |:  |:| |||:||: :||
Db          5355 UUUCUGUCCGCUUUCUCUGGAGUUUGUGUCGGUGUGUAUUGUUUAUAGAAAUAAUAUAAA 5414

Qy          5402 AAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGGCTCGCCAATTGAACTCACTGA 5461
                 |  |||:::||| ||    |::   |  |:|| ||||||   ||| |: ||||: || ||
Db          5415 AUUAGGUUUGAGAGAGAAGAUUACAAACGUGAGAGACGGAGGGCCCAUGGAACUUACAGA 5474

Qy          5462 AAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGCTGTGAAACTCGAAAAGGTTC- 5520
                 | | |: |::|| |||::| :||| || |: || |:| |  : |  |: | |||| ::|
Db          5475 AGAAGUCGUUGAUGAGUUCAUGGAAGAUGUCCCUAUGUCGAUCAGGCUUGCAAAGUUUCG 5534

Qy          5521 -----------CGGAAAACAAAAAAGAAATGGTAGGTAATAATGTTAATAAT-------- 5561
                               |||| |   | |       ||| || ||:  :| :||:
Db          5535 AUCUCGAACCGGAAAAAAGAGUGAUGUCCGCAAAGGGAAAAAUAGUAGUAAUGAUCGGUC 5594

Qy          5562 -------AAGAAAATAAATAACAGTGGTAAGAAGGGTTTTAAAATTGAGGAAATTGAGGA 5614
                        || || |   |:|  | :| :||| |   :     ||:       |   || |
Db          5595 AGUGCCGAACAAGAACUAUAGAAAUGUUAAGGAUUUUGGAGGAAUGAGUUUUAAAAAGAA 5654

Qy          5615 TAATGTAAGTGATGACGAGT---------CTATCGCGTCATCGAGTACGTTTTAATCAAT 5665
                 :||: :||  ||:|| || :         |: :|||   |:||  : ||::::|   ||:
Db          5655 UAAUUUAAUCGAUGAUGAUUCGGAGGCUACUGUCGCCGAAUCGGAUUCGUUUUA---AAU 5711

Qy          5666 ATGCCTTATACAATCAACTCTCCGAGCCAATTTGTTTACTTATCTTCCGCTTACGCAGAT 5725
                 |:| |::| |  |:||   |:||    || :: |: : |:: :| :| || :  || ||
Db          5712 AUGUCUUACAGUAUCACUACUCCAUCUCAGUUCGUGUUCUUGUCAUCAGCGUGGGCCGAC 5771

Qy          5726 CCTGTGCAGCTGATCAATCTGTGTACAAATGCATTGGGTAACCAGTTTCAAACGCAACAA 5785
                 ||  :  || : |: ||: : :|:|| ||:|| :: || || |||:::||||| ||||||
Db          5772 CCAAUAGAGUUAAUUAAUUUAUGUACUAAUGCCUUAGGAAAUCAGUUUCAAACACAACAA 5831

Qy          5786 GCTAGGACAACAGTCCAACAGCAATTTGCGGATGCCTGGAAACCTGTGCCTAGTATGACA 5845
                 ||: | ||    |: |||   |||::    || |  :|||||||:   ||     : ||
Db          5832 GCUCGAACUGUCGUUCAAAGACAAUUCAGUGAGGUGUGGAAACCUUCACCACAAGUAACU 5891

Qy          5846 GTGAGATTTCCTGCATCGGATTTCTATGTGTATAGATATAATTCGACGCTTGATCCGTTG 5905
                 |: || :: ||:|     || ::  | |:|:| || :| ||: ||    : || ||| :
Db          5892 GUUAGGUUCCCUGACAGUGACUUUAAGGUGUACAGGUACAAUGCGGUAUUAGACCCGCUA 5951

Qy          5906 ATCACGGCGTTATTAAATAGCTTTGATACTAGAAATAGAATAATAGAGGTTGATAATCAA 5965
                  :||| ||  : ::|  :   :: || ||:|||||:||||:||:||| |::|| ||:||
Db          5952 GUCACAGCACUGUUAGGUGCAUUCGACACUAGAAAUAGAAUAAUAGAAGUUGAAAAUCAG 6011
```

```
Qy         5966 CCCGCACCGAATACTACTGAAATCGTTAACGCGACTCAGAGGGTAGACGATGCTACTGTA 6025
                 |    || |  ||: | || |   :  | || ||:|  || |:|||||| || || |:
Db         6012 GCGAACCCCACGACUGCCGAGACGUUAGAUGCUACUCGUAGAGUAGACGACGCAACGGUG 6071

Qy         6026 GCTATAAGGGCTTCAATCAATAATTTGGCTAATGAACTGGTTCGTGGAACTGGCATGTTC 6085
                || |:||||    | |: ||:||:::       ||| :| :  | ||||| ||    :
Db         6072 GCCAUAAGGAGCGCGAUAAAUAAUUUAAUAGUAGAAUUGAUCAGAGGAACCGGAUCUUAU 6131

Qy         6086 AATCAAGCAGGCTTTGAGACTGCTAGTGGACTTGTCTGGACCACAACTCCGGCTACTTAG 6145
                ||:|        :: ||||   |:  :||  : |: :||||| |   :|| || ||:
Db         6132 AAUCGGAGCUCUUUCGAGAGCUCUUCUGGUUUGGUUUGGACCUCUGGUCCUGCAACU--- 6188

Qy         6146 CTATTGTTGTGAGATTTCCTAAAATAAAGTCGCTGAAGACTTAAAATTCAGGGTGGCTGA 6205
                 :   |: |: |   : | :|| | | |   | :   | |   ||   ||  |:||
Db         6189 -UGAGGUAGUCAAGAUGCAUAAUAAAUAACGGAUUGUGUCCGUAAUCACA-CGUGGUGCG 6246

Qy         6206 TACCAAAATCAGCAGTGGTTGTTCGTCCACTTAAATATAACGATTGTCATATCTGGATCC 6265
                :|| | ||     ||:| :: : | :||||::|||:  || | ::|:  : :  |    |
Db         6247 UACGAUAACGCAUAGUGUUUUUCCCUCCACUUAAAUCGAAGGGUUGU-GUCUUGGAUCGC 6305

Qy         6266 AACAGTTAAACCATGTGATGGTGTATACTGTGGTATGGCGTAAAACATCGGAGAGGTTCG 6325
                    |: |||             :|:||    | | |     ||  |   ||| ||::||
Db         6306 GCGGGUCAAAUGUAUAUGGUUCAUAUACAUCCGCAGGCACGUAAUAAAGCGAGGGGUUCG 6365

Qy         6326 AATCCTCCCCTAACCGCCGGTAGCGGCCCA 6355
                ||:|| ||| : ||| ||||:|| ||||||
Db         6366 AAUCCCCCCGUUACCCCCGGUAGGGGCCCA 6395


RESULT 3
US-10-828-029-1
; Sequence 1, Application US/10828029
; Publication No. US20040171813A1
;   GENERAL INFORMATION:
;        APPLICANT: GARGER, STEPHEN
;                   HOLTZ, R. BARRY
;                   McCULLOCH, MICHAEL
;                   TURPEN, THOMAS
;        TITLE OF INVENTION: A PROCESS FOR ISOLATING AND
;                            PURIFYING VIRUSES SOLUBLE PROTEINS AND PEPTIDES
;                            FROM PLANT SOURCES
;        NUMBER OF SEQUENCES: 5
;        CORRESPONDENCE ADDRESS:
;             ADDRESSEE: Howrey & Simon
;             STREET: 1299 Pennsylvania Avenue N.W.
;             CITY: Washington
;             STATE: DC
;             COUNTRY: USA
;             ZIP: 20004
;        COMPUTER READABLE FORM:
;             MEDIUM TYPE: Diskette
;             COMPUTER: IBM Compatible
;             OPERATING SYSTEM: DOS
;             SOFTWARE: FastSEQ for Windows Version 2.0
;        CURRENT APPLICATION DATA:
;             APPLICATION NUMBER: US/10/828,029
;             FILING DATE: 20-Apr-2004
;             CLASSIFICATION: <Unknown>
;        PRIOR APPLICATION DATA:
;             APPLICATION NUMBER: US/09/962,527
;             FILING DATE: 24-Sep-2001
;             APPLICATION NUMBER: 09/037,751
;             FILING DATE: 10-march-1998
;        ATTORNEY/AGENT INFORMATION:
;             NAME: Halluin, Albert P
;             REGISTRATION NUMBER: 25,277
;             REFERENCE/DOCKET NUMBER: 00801.0140.999
;        TELECOMMUNICATION INFORMATION:
;             TELEPHONE: 650-463-8109
;             TELEFAX: 650-463-8400
;             TELEX: <Unknown>
;   INFORMATION FOR SEQ ID NO: 1:
;        SEQUENCE CHARACTERISTICS:
;             LENGTH: 6395 base pairs
;             TYPE: nucleic acid
;             STRANDEDNESS: single
;             TOPOLOGY: unknown
;        MOLECULE TYPE: Genomic RNA
;        SEQUENCE DESCRIPTION: SEQ ID NO: 1:
US-10-828-029-1

  Query Match             38.8%;  Score 2468;  DB 19;  Length 6395;
  Best Local Similarity   44.6%;  Pred. No. 0;
  Matches 2851;  Conservative 1173;  Mismatches 2300;  Indels   66;  Gaps   11;

Qy           20 ACAACAACAATTAAAACAAAAACAACATATTACAAACAACAAACAACAACAATGGCACAC 79
                || |  |  |  |||  | ||||||||:   |   || |   ||||  ||||:|||| ||
Db           18 ACCAACAACAACAAACAACAAACAACAUUACAAUUACUAUUUACAAUUACAAUGGCAUAC 77

Qy           80 ATACAATCTATAATTAGCAACGCCCTTCTTGAAAGCGTGAGTGGTAAAAACACTCTCGTT 139
                | |||  |    |  |     ||  : |: || |  |:  | || || ||| |  : |:
Db           78 ACACAGACAGCUACCACAUCAGCUUUGCUGGACACUGUCCGAGGAAACAACUCCUUGGUC 137

Qy          140 AATGACCTTGCAAGAAGGCGCATGTACGATACGGCCGTGGAAGAATTTAACGCCCGCGAC 199
                ||:|| |: ||||   | ||  : :|||| || || |: ||||| :::||||| || |||
Db          138 AAUGAUCUAGCAAAGCGUCGUCUUUACGACACAGCGGUUGAAGAGUUUAACGCUCGUGAC 197

Qy          200 CGTAGACCAAAGGTCAACTTTTCCAAAACTATTAGCGAAGAGCAAACGCTTCTAGTCTCC 259
                || || || ||||: |||::::| |||   |: ||||| ||||| ||||:: : |   ||
Db          198 CGCAGGCCCAAGGUGAACUUUUCAAAAGUAAUAAGCGAGGAGCAGACGCUUAUUGCUACC 257

Qy          260 AACGCGTACCCGGAGTTCCAGATTACCTTTTATAATACTCAAAATGCCGTACACAGTTTG 319
                   |||:| || || ::||| |::|| ::::|:|| || ||||:||||: ||     :
Db          258 CGGGCGUAUCCAGAAUUCCAAAUUACAUUUUAUAACACGCAAAAUGCCGUGCAUUCGCUU 317

Qy          320 GCTGGAGGTTTGAGAGCATTAGAATTGGAATATCTGATGCTACAAGTTCCCTATGGATCG 379
                || || || ::| || | ::|||| :||||:|:|:||:| : ||| ::|||:| |||:|
Db          318 GCAGGUGGAUUGCGAUCUUUAGAACUGGAAUAUCUGAUGAUGCAAAUUCCCUACGGAUCA 377

Qy          380 CCGACATATGATATAGGTGGGAACTTTGCAGCACATTTGTTCAAAGGCAGGGATTACGTG 439
                  ||| :|:|| |:||| ||||| :::||| | ||: :|::||| ||  |  :| |:
Db          378 UUGACUUAUGACAUAGGCGGGAAUUUUGCAUCGCAUCUGUUCAAGGGACGAGCAUAUGUA 437

Qy          440 CATTGCTGTATGCCCAATCTGGACATACGAGATATAATGAGGCACGAAGGACAAAAGGAC 499
                || :||:| |:|||||| |:|||| : ||||| |: |:| |||||||||| || || |||
Db          438 CACUGCUGCAUGCCCAACCUGGACGUUCGAGACAUCAUGCGGCACGAAGGCCAGAAAGAC 497

Qy          500 TCAATTGAGATGTATTTGTCCAGATTGTCTCGTTCTAACAAGGTAATTCCTGAGTTTCAA 559
                   |::||  : :|  : :| ||  :     |       ||   | : ||  | :: |||
Db          498 AGUAUUGAACUAUACCUUUCUAGGCUAGAGAGAGGGGGGAAAACAGUCCCCAACUUCCAA 557

Qy          560 AGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAAGTCTGCTGCTCTAAAACTTTT 619
                | ||| || ::: |||| :| ||||||  :||  | || |    |:|    || ||:::
Db          558 AAGGAAGCAUUUGACAGAUACGCAGAAAUUCCUGAAGACGCUGUCUGUCACAAUACUUUC 617

Qy          620 CAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGAAGATACGCTGTTGCTCTGCAC 679
                |||      |||   || |||    || |    || |||   :| ||  ::|| |: |||
Db          618 CAGACAAUGCGACAUCAGCCGAUGCAGCAAUCAGGCAGAGUGUAUGCCAUUGCGCUACAC 677

Qy          680 AGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCGTTAATATCTAAGAATATACAT 739
                ||  : :|:|| |: || |   |:|||:: || || ||  :  :    || ||: : ||:
Db          678 AGCAUAUAUGACAUACCAGCCGAUGAGUUCGGGGCGGCACUCUUGAGGAAAAAUGUCCAU 737

Qy          740 GTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTACTAGACCAGACGGAGGTTACG 799
                   :| :|:|| ||:: |   ::  | ||     :  : |: ||  |  |  | |: |
Db          738 ACGUGCUAUGCCGCUUUCCACUUCUCCGAGAACCUGCUUCUUGAAGAUUCAUACGUCAAU 797

Qy          800 CTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGATGATGTTTCTTTTTTCTTTGCT 859
                 :  | ||||:   |||   :::     | || || ||  |  :  | ::::  :::||
Db          798 UUGGACGAAAUCAACGCGUGUUUUUCGCGCGAUGGAGACAAGUUGACCUUUUCUUUUGCA 857

Qy          860 GATGAAAGTACTTTAAATTATAGTCATAAATACAAAAATATCTTGCATTATGTAGTTAAA 919
                   || ||:||: : ||::|: |:||:|  :|    ||:|:  :  | :|:|:    |||
Db          858 UCAGAGAGUACUCUUAAUUAUUGUCAUAGUUAUUCUAAUAUUCUUAAGUAUGUGUGCAAA 917
```

```
Qy        920 TCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAGGAATTTTTAGTCACTAGGGTT 979
               |::||:: || || :|:| :|||   |:::|| : ||||| :::::||:||| || |::
Db        918 ACUUACUUCCCGGCCUCUAAUAGAGAGGUUUACAUGAAGGAGUUUUUAGUCACCAGAGUU 977

Qy        980 AATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTATATTCTGTACAAGAGTGTTAGA 1039
              ||:|| :||::::|:|| ::: | | | :|||:|| : : :: :|:||||  |:|:
Db        978 AAUACCUGGUUUUGUAAGUUUUCUAGAAUAGAUACUUUUCUUUUGUACAAAGGUGUGGCC 1037

Qy       1040 CAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATGGAAGACGCCTTTGCTTACAAG 1099
              ||   | |    ||:||:|| |||:: :|:   || |:||||||||| :    ::||||
Db       1038 CAUAAAAGUGUAGAUAGUGAGCAGUUUUAUACUGCAAUGGAAGACGCAUGGCAUUACAAA 1097

Qy       1100 AAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTTAGAGACACGGCTTCGGTTAAC 1159
              || ||  : || |:|: |||||  || |||    :| ::   ||  |  | :| |: ||
Db       1098 AAGACUCUUGCAAUGUGCAACAGCGAGAGAAUCCUCCUUGAGGAUUCAUCAUCAGUCAAU 1157

Qy       1160 TTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCGCTGTTTGAGGGTTCTATTACC 1219
              :  :||:: || || |:|| ||| |:||: |: |:|||  : :: ||   ::|: :
Db       1158 UACUGGUUUCCCAAAAUGAGGGAUAUGGUCAUCGUACCAUUAUUCGACAUUUCUUUGGAG 1217

Qy       1220 AGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGTGACTTCGTTTACACAGTGCTT 1279
              |  |  |||| |||  | |  || |:| : |:       || ::||: :  ||||:||::
Db       1218 ACUAGUAAGAGGACGCGCAAGGAAGUCUUAGUGUCCAAGGAUUUCGUGUUUACAGUGCUU 1277

Qy       1280 AATCATATCAGAACATATCAAGCCAAAGCGTTAACTTACCAGAACGTATTATCTTTCGTG 1339
              || || |:  |||||:| || || |||||  : || :||   || |: :: :|  : |:
Db       1278 AACCACAUUCGAACAUACCAGGCGAAAGCUCUUACAUACGCAAAUGUUUUGUCCCUUGUC 1337

Qy       1340 GAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACTGCTAGGTCTGAATGGGATGTA 1399
              || :| |:  ||:|  | |: |: |: || ||:|: || || |||:| |||:||||:|:
Db       1338 GAAUCGAUUCGAUCGAGGGUAAUCAUUAACGGUGUGACAGCGAGGUCCGAAUGGGAUGUG 1397

Qy       1400 GATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTCTTGCAGACTAAGCTGGCTGCG 1459
              || ||| |  :  : ||| ||::|:| |:||| :: : | :||| ||:||||: || |
Db       1398 GACAAAUCUUUGUUACAAUCCUUGUCCAUGACGUUUUACCUGCAUACUAAGCUUGCCGUU 1457

Qy       1460 CTTCAAGACGATATAGTAATGGGAAAGTTTCGGTGCTTGGATAAGACCACTTCTGAACTT 1519
              |:  | || ||  :| : |:  | |||::: |   |      || ||    :   | | :
Db       1458 CUAAAGGAUGACUUACUGAUUAGCAAGUUUAGUCUCGGUUCGAAAACGGUGUGCCAGCAU 1517

Qy       1520 ATTTGGGATGAGGTGGGCAAATTTTTTGGAAACGTTTTCCCCACTATCAAAGAGAGATTG 1579
               : :||||:||| :          :::|| ||||  :: ||| |  : ||||||||| :
Db       1518 GUGUGGGAUGAGAUUUCGCUGGCGUUUGGGAACGCAUUUCCCUCCGUGAAAGAGAGACUC 1577

Qy       1580 GTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTGAAGATCAAGATCCCAGATCTG 1639
               :|| ||||||| :: :    |:    |   | ||  :  |||:|| | : || ||:|:
Db       1578 UUGAACAGGAAACUUAUCAGAGUGGCAGGCGACGCAUUAGAGAUCAGGGUGCCUGAUCUA 1637

Qy       1640 TATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACCAAGTCTGAGGAGTTACCGCAT 1699
              :|:|: || :   | ||||| :: |:  |:|| :|||     :|:| |||  : ||
Db       1638 UAUGUGACCUUCCACGACAGAUUAGUGACUGAGUACAAGGCCUCUGUGGACAUGCCUGCG 1697

Qy       1700 CTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATGTACGACGCGTTATCAGAATTA 1759
              |: || |: | |||| |  : |||||| | ||    |:|:|| | ||  : :|||| ::|
Db       1698 CUUGACAUUAGGAAGAAGAUGGAAGAAACGGAAGUGAUGUACAAUGCACUUUCAGAGUUA 1757

Qy       1760 TCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAGTTCAAAGACATGTGCAAGGCT 1819
              :|  :  : | ||   |:|| || ::|||: : |     ::     | |:|:|| |  |:
Db       1758 UCGGUGUUAAGGGAGUCUGACAAAUUCGAUGUUGAUGUUUUUUCCCAGAUGUGCCAAUCU 1817

Qy       1820 TTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTTGCAGTGGCCGAGAATAGAAGC 1879
              :: || |::   ||      ||||||    |: |: |: || |:       ||:   |||
Db       1818 UUGGAAGUUGACCCAAUGACGGCAGCGAAGGUUAUAGUCGCGGUCAUGAGCAAUGAGAGC 1877

Qy       1880 GGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAATGTGGCTAAGGCTCT------T 1933
              ||: : ||:|: || :::||    || || |||| |||:|: ||    ||: :      :
Db       1878 GGUCUGACUCUCACAUUUGAACGACCUACUGAGGCGAAUGUUGCGCUAGCUUUACAGGAU 1937

Qy       1934 AAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCGACATCCGAAGAGGTGAACGTA 1993
               ||   | ||| :| || |  |   :  |  ::    | | |   |  || |
Db       1938 CAAGAGAAGGCUUCAGAAGGUGCAUUGGUAGUUACCUCAAGAGAAGUUGAAGAACCGUCC 1997

Qy       1994 AATAAATTTTCTATTGCTGAGAAAGGGAGATTGCCTGTGTGTGCAGAAAGTCATGGTTTG 2053
              |  ||   ::| |: ||      || |  |      |   |:   |   |  |:  :  |
Db       1998 AUGAAGGGUUCGAUGGCCAGAGGAGAGUUACAAUUAGCUGGUCUUGCUGGAGAUCAUCCG 2057

Qy       2054 ACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTCAACGATTTCCATAAGGCTTGC 2113
                |    |  | :   || || ||||| : |||:|  :  |  | :: ||:| |||
Db       2058 GAGUCGUCCUAUUCUAAGAACGAGGAGAUAGAGUCUUUAGAGCAGUUUCAUAUGGCGACG 2117

Qy       2114 GTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTCTACACTGGCTCACTCAAAGTT 2173
              |  ||:    : |::   ||||| |:|   :|| ::|: :|||| ||  |  : ||||::
Db       2118 GCAGAUUCGUUAAUUCGUAAGCAGAUGAGCUCGAUUGUGUACACGGGUCCGAUUAAAGUU 2177

Qy       2174 CAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCGTTGTCCGCCACTGTATCAAAT 2233
              || ||||:||| |||: : : || ||  :|| ||| :|  : :| ||  | |: :| ||:
Db       2178 CAGCAAAUGAAAAACUUUAUCGAUAGCCUGGUAGCAUCACUAUCUGCUGCGGUGUCGAAU 2237

Qy       2234 CTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCTGATTCCAGGGAGAAAGTTGGT 2293
              |:   ||||   |: || ||:  ||  |    :||   :||  || |  | ||  ::||
Db       2238 CUCGUCAAGAUCCUCAAAGAUACAGCUGCUAUUGACCUUGAAACCCGUCAAAAGUUUGGA 2297

Qy       2294 GTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCTGCGGCCAAAGGTCATTCATGG 2353
              |: : |||:|:  | :  |  |||:|| :  :||||||  |||||||  |:||: ||:||
Db       2298 GUCUUGGAUGUUGCAUCUAGGAAGUGGUUAAUCAAACCAACGGCCAAGAGUCAUGCAUGG 2357

Qy       2354 GGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCACTTCTATCTTATGAAGGAGAT 2413
              || |::|:        ||  | ||||      :   || |:: :    :|:|| |   |
Db       2358 GGUGUUGUUGAAACCCACGCGAGGAAGUAUCAUGUGGCGCUUUUGGAAUAUGAUGAGCAG 2417

Qy       2414 AGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTATCATCTGATACAATGGTATAT 2473
               |  :||:|||       || :|||| || |: ||:|:    :|:||  |  : |: :|:
Db       2418 GGUGUGGUGACAUGCGAUGAUUGGAGAAGAGUAGCUGUUAGCUCUGAGUCUGUUGUUUAU 2477

Qy       2474 TCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATGAGAGACGGTGAACCCCACGAA 2533
              :| || |: || || |:|  || :|:| | | |    :  || |||| |||||| || |
Db       2478 UCCGACAUGGCGAAACUCAGAACUCUGCGCAGACUGCUUCGAAACGGAGAACCGCAUGUC 2537

Qy       2534 CCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGTTGTGGAAAGTACAAAGGAGAT 2593
                :|  |||||| : |: |::|:||| || |: || || :|:|||||   |||||  | :
Db       2538 AGUAGCGCAAAGGUUGUUCUUGUGGACGGAGUUCCGGGCUGUGGAAAAACCAAAGAAAUU 2597

Qy       2594 TTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTTCCTGGAAAACAAGCTGCTGCT 2653
               ::   ||  :: |: ::||:|| ||: : |: :: |: ||:|| || |||||| || |
Db       2598 CUUUCCAGGGUUAAUUUUGAUGAAGAUCUAAUUUUAGUACCUGGGAAGCAAGCCGCGGAA 2657

Qy       2654 ATGATCAGAAGAAGGGCTAATTCATCTGGACTGATAAGAGCCACAATGGACAATGTGAGA 2713
              |:||:||||||| | || ||::| :| ||  : |:    ||||| | |||||| |: | |
Db       2658 AUGAUCAGAAGACGUGCGAAUUCCUCAGGGAUUAUUGUGGCCACGAAGGACAACGUUAAA 2717

Qy       2714 ACGGTAGATTCACTTCTAATGCAT---------CCAAAACCGCGATCACACAAGAGGCTT 2764
              || |: ||::|  : :  |:| |:            | ||   |      ||||||| :
Db       2718 ACCGUUGAUUCUUUCAUGAUGAAUUUUGGGAAAAGCACACGCUGUCAGUUCAAGAGGUUA 2777

Qy       2765 TTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTTAACTTCCTGGTGCTTATCTCT 2824
              :: |::||:||||||::||:| :||| || ||::|:|::|| :: |: |:|   |: :|
Db       2778 UUCAUUGAUGAAGGGUUGAUGUUGCAUACUGGUUGUGUUAAUUUUCUUGUGGCGAUGUCA 2837

Qy       2825 GGTTGCGACATCGCATACATTTACGGAGATACACAGCAGATTCCTTTCATTAACAGAGTT 2884
                 :|||| |: |||:|  :::||||||| ||||||||||::|| : ||: || ||||::
Db       2838 UUGUGCGAAAUUGCAUAUGUUUACGGAGACACACAGCAGAUUCCAUACAUCAAUAGAGUU 2897

Qy       2885 CAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAAGTGGATGAAGTTGAGATGAGG 2944
                    ::||||:| |||   ||::::|  ||  :| |||: || || |: ||||   |
Db       2898 UCAGGAUUCCCGUACCCCGCCCAUUUUGCCAAAUUGGAAGUUGACGAGGUGGAGACACGC 2957

Qy       2945 AGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTCCTACAATCGAAGTACGAAGGA 3004
              || || || |:  | :| ||||  ||:|: |    ::  |:  |   ||  :| || ||
Db       2958 AGAACUACUCUCCGUUGUCCAGCCGAUGUCACACAUUAUCUGAACAGGAGAUAUGAGGGC 3017

Qy       3005 GCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCATCTGAGATGATAGGCGGTAAG 3064
                 |: |  | |||::|  | |:  ||   :| |: :|    ||||:| : |||||
Db       3018 UUUGUCAUGAGCACUUCUUCGGUUAAAAAGUCUGUUUCGCAGGAGAUGGUCGGCGGAGCC 3077

Qy       3065 GGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGGAAAATTGTAACTTTCACTCAGGCT 3124
              |  |:  : ||     : :| |||||  :  | || || |:  : ||::: || ||  |
```

```
Db   3078 GCCGUGAUCAAUCCGAUCUCAAAACCCUUGCAUGGCAAGAUCCUGACUUUUACCCAAUCG 3137

Qy   3125 GATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTGAACACCGTTCATGAGATCCAA 3184
          ||:|||   |   :       |  || :|:    |:|:  |||| |: ||:||  : |||
Db   3138 GAUAAAGAAGCUCUGCUUUCAAGAGGGUAUUCAGAUGUUCACACUGUGCAUGAAGUGCAA 3197

Qy   3185 GGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACGGCAACTCCACTGACTCTGATT 3244
          || || || :     ||:|: :| |: |: || :: ||  | || ||| :  |  : |::
Db   3198 GGCGAGACAUACUCUGAUGUUUCACUAGUUAGGUUAACCCCUACACCAGUCUCCAUCAUU 3257

Qy   3245 TCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGACACACAAAGAGCTTCAAATAT 3304
           |         ||| ||:|:: : |:|||  :| | || |||||        :||| :|
Db   3258 GCAGGAGACAGCCCACAUGUUUUGGUCGCAUUGUCAAGGCACACCUGUUCGCUCAAGUAC 3317

Qy   3305 TACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGTGATTTGTCTTCTTTAAGCTCC 3364
          :|||| |: |:  : ||:||:::||:    |: |::|| ||: :        : |||:|
Db   3318 UACACUGUUGUUAUGGAUCCUUUAGUUAGUAUCAUUAGAGAUCUAGAGAAACUUAGCUCG 3377

Qy   3365 TTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGATAGCAATTACAGATGGATGCA 3424
          : | : ::||| |:|:|:| ||: || |||||| |    |:|||||::|||||: ||  |
Db   3378 UACUUGUUAGAUAUGUAUAAGGUCGAUGCAGGAACACAAUAGCAAUUACAGAUUGACUCG 3437

Qy   3425 GTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAATCAGGAGACTTTCCAGATCTA 3484
          |:|::||||||:   ||:|: :::|: ||| | || ||  | || ||  :: | ||: :
Db   3438 GUGUUCAAAGGUUCCAAUCUUUUUGUUGCAGCGCCAAAGACUGGUGAUAUUUCUGAUAUG 3497

Qy   3485 CAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACTATACTTAACAAGTATGATGCT 3544
          |||:: :| :| ||:   :| |:||| || || || || |:  : || || : :||:||:
Db   3498 CAGUUUUACUAUGAUAAGUGUCUCCCAGGCAACAGCACCAUGAUGAAUAAUUUUGAUGCU 3557

Qy   3545 GTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAGGATTGTGTTCTTGATTTTTCC 3604
          |::||||:||||::   :|| | :    : ||:|: || ||::|  :  : ||: : :|
Db   3558 GUUACCAUGAGGUUGACUGACAUUUCAUUGAAUGUCAAAGAUUGCAUAUUGGAUAUGUCU 3617

Qy   3605 AAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTAGAGCCAGTTTTGCGTACCGCG 3664
          ||   : ::|    ||| |||||    |    |   |:|   ||  :  : || || |||
Db   3618 AAGUCUGUUCGUGCGCCUAAGGAUCAAAUCAAACCACUAAUACCUAUGGUACGAACGGCG 3677

Qy   3665 GCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTGGTTGCAATGATTAAAAGAAAT 3724
          || |||  |||| |     | ||||:| : |||||: : |: || |:||::||||||||
Db   3678 GCAGAAAUGCCACGCCAGACUGGACUAUUGGAAAAUUUAGUGGCGAUGAUUAAAAGAAAC 3737

Qy   3725 TTCAACGCACCAGACCTGACGGGGACGATTGACATTGAGAGCACCGCATCTGTTGTAGTA 3784
          :: |||||||| ||  :| | || |  |::|| |::|| |  || |||:|: : |: |:|
Db   3738 UUUAACGCACCCGAGUUGUCUGGCAUCAUUGAUAUUGAAAAUACUGCAUCUUUGGUUGUA 3797

Qy   3785 GATAAGTTTTTTGATAGCTATTTTATTAAAAAAGAAAAATACACAAAAAATATTGCTGGA 3844
          ||:|||::::::||:|| :|:::  ::||| || ||| | |  |||| || | :| :
Db   3798 GAUAAGUUUUUUGAUAGUUAUUUGCUUAAAGAAAAAAGAAAACCAAAUAAAAAUGUUUCU 3857

Qy   3845 GTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAACAGGAAAGAAGTACTATTGGAC 3904
           :| : |  |  || :|  : |  |||:||:: |||||   | || | |:|  | : | |
Db   3858 UUGUUCAGUAGAGAGUCUCUCAAUAGAUGGUUAGAAAAGCAGGAACAGGUAACAAUAGGC 3917

Qy   3905 GACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATCGATCAGTACAAGCACATGATC 3964
           |  : ||  | :   |::::   ||: :||| ||  : ||:|||:|||  ||||:||:
Db   3918 CAGCUCGCAGAUUUUGAUUUUGUGGAUUUGCCAGCAGUUGAUCAGUACAGACACAUGAUU 3977

Qy   3965 AAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAGAATGAATACCCTGCTCTGCAA 4024
          || || ||||| ||||| || ::|||| :::|||: || |  || :|||| ||: :|||
Db   3978 AAAGCACAACCCAAACAAAAGUUGGACACUUCAAUCCAAACGGAGUACCCGGCUUUGCAG 4037

Qy   4025 ACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTGGCCGGTTTCTCA---GAGCTT 4081
          || |::|: :||||::| ||  |||:||| |  |: :: | |   :: :     ||||::
Db   4038 ACGAUUGUGUACCAUUCAAAAAAGAUCAAUGCAAUAUUCGGCCCGUUGUUUAGUGAGCUU 4097

Qy   4082 ACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTTCTTTTCTTTACTAGGAAAACT 4141
          || |||    : |: ||     ::||::| |  |  ::: : :: :: || || || ||
Db   4098 ACUAGGCAAUUACUGGACAGUGUUGAUUCGAGCAGAUUUUUGUUUUUCACAAGAAAGACA 4157

Qy   4142 CCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCGCACGTTCCTATGGATGTGTTA 4201
          ||||  ||||:: | || :: ::|   ||:|:||||   || |: || |:|||:|: ::
Db   4158 CCAGCGCAGAUUGAGGAUUUCUUCGGAGAUCUCGACAGUCAUGUGCCGAUGGAUGUCUUG 4217

Qy   4202 GAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAGTTTCATTGTGCTGTAGAGTAT 4261
          || |:|||:|: :| || :| || || :| ||||| || :: || :|:|| |:||| :|
Db   4218 GAGCUGGAUAUAUCAAAAUACGACAAAUCUCAGAAUGAAUUCCACUGUGCAGUAGAAUAC 4277

Qy   4262 GAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCCGAAGTGTGGAAACAAGGGCAC 4321
          || |: :||  ||||::|||: :  | || :: ::||  ||||: :|||||||||||||
Db   4278 GAGAUCUGGCGAAGAUUGGGUUUUGAAGACUUCUUGGGAGAAGUUUGGAAACAAGGGCAU 4337

Qy   4322 AGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAGACATGTCTGTGGTATCAAAGG 4381
          || || || ||  : |||||::| |  || || |: || || :|  : :||:|:|||||
Db   4338 AGAAAGACCACCCUCAAGGAUUAUACCGCAGGUAUAAAAACUUGCAUCUGGUAUCAAAGA 4397

Qy   4382 AAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTTATAATAGCAGCTTGCTTGGGT 4441
          || ||||| || |: || || ::||: || || ||:|: |: |: || || :| ::||
Db   4398 AAGAGCGGGGACGUCACGACGUUCAUUGGAAACACUGUGAUCAUUGCUGCAUGUUUGGCC 4457

Qy   4442 TCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTTTGTGGAGACGATTCCGTTTTG 4501
          :| |:| : ||||:||| ||  : |: ||||| || ::::| || |||||:    :  :|
Db   4458 UCGAUGCUUCCGAUGGAGAAAAUAAUCAAAGGAGCCUUUUGCGGUGACGAUAGUCUGCUG 4517

Qy   4502 TATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCATGTGCTAATCTCATGTGGAAT 4561
          :| :::||||||||::  || :: || ||  : ||    :  || ||:|: |:|:||||:
Db   4518 UACUUUCCAAAGGGUUGUGAGUUUCCGGAUGUGCAACACUCCGCGAAUCUUAUGUGGAAU 4577

Qy   4562 TTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTTTGTGGTAGATACATCATACAC 4621
          :::|| || ||||:|: :| |||   |:| || :||::::| || |||:|  : |:|||
Db   4578 UUUGAAGCAAAACUGUUUAAAAAACAGUAUGGAUACUUUUGCGGAAGAUAUGUAAUACAU 4637

Qy   4622 CATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAGTTGATCTCCAAACTTGGGGCA 4681
          || || |  |||   |: |:|:|::| ||:||  : |||::||:|:| ||||::|| ||
Db   4638 CACGACAGAGGAUGCAUUGUGUAUUACGAUCCCCUAAAGUUGAUCUCGAAACUUGGUGCU 4697

Qy   4682 AAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGGGTGTCTTTGTGCGATGTTGCT 4741
          ||||| |:||||||::  || |||:: || |||:: ||   |:|: : :| ||:|::||:
Db   4698 AAACACAUCAAGGAUUGGGAACACUUGGAGGAGUUCAGAAGGUCUCUUUGUGAUGUUGCU 4757

Qy   4742 TGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTGAACGCAGCTATCAAGGAGGTT 4801
            ::|| :    |||   :|       :   | ||| :| |||  ||: :   |||||::
Db   4758 GUUUCGUU---GAACAAUUGUGCGUAUUACACACAGUUGGACGACGCUGUAUGGGAGGUU 4814

Qy   4802 CATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGTGTTAACAAATTTTTGTGTGAT 4861
          ||:|| |||||   :   ||::||:::| :: :||  |: :    || : :::|: :||:
Db   4815 CAUAAGACCGCCCCUCCAGGUUCGUUUGUUUAUAAAAGUCUGGUGAAGUAUUUGUCUGAU 4874

Qy   4862 AAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAGTCTCAGAGATACTGTCAAAAT 4921
          ||| :: : :::|||| :::|::: :| |:|||: :   : : | ||  |  |: || |:
Db   4875 AAAGUUCUUUUUAGAAGUUUGUUUAUAGAUGGCUCUAGUUGUUAAAGGAAAAGUGAAUAU 4934

Qy   4922 TAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACTTCCGGCATTCATGACTAAGGT 4981
           |  |||:: |: || |: :| |||  |||  |||:  : ||| |  :  : ||    |:
Db   4935 CAAUGAGUUUAUCGACCUGUCAAAAAUGGAGAAGAUCUUACCGUCGAUGUUUACCCCUGU 4994

Qy   4982 CAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGCTGTTAAGAATGATAGTCTTTC 5041
           |||||:|::|     :| |  |: || || |: |:|| :  : ||||:||     : :|
Db   4995 AAAGAGUGUUAUGUGUUCCAAAGUUGAUAAAAUAAUGGUUCAUGAGAAUGAGUCAUUGUC 5054

Qy   5042 TGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAAAGGGTATGTGTGCTTAGCTGA 5101
           || |:  |  : |::||||| |::||| :  :: | |  || :| |: :| ::||| |
Db   5055 AGAGGUGAACCUUCUUAAAGGAGUUAAGCUUAUUGAUAGUGGAUACGUCUGUUUAGCCGG 5114

Qy   5102 TTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTGCCGTGGTGGTGTCAGTGTTTG 5161
          :::||: |:  | || |||:||||  : || || || :|| | || ||:|: || |: :|
Db   5115 UUUGGUCGUCACGGGCGAGUGGAACUUGCCUGACAAUUGCAGAGGAGGUGUGAGCGUGUG 5174

Qy   5162 TATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAACGCTGGGTGCGTATCACGCCCC 5221
          : : |: || || || |:| ||||     | || || || |: ||  | :|  || |  |
Db   5175 UCUGGUGGACAAAAGGAUGGAAAGAGCCGACGAGGCCACUCUCGGAUCUUACUACACAGC 5234

Qy   5222 TGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAATTATTCAATAACATCCGAGGA 5281
           ||:   || || |  :::   :: ||| :  : || ||::|: | |:|||  || ||||
Db   5235 AGCUGCAAAGAAAAGAUUUCAGUUCAAGGUCGUUCCCAAUUAUGCUAUAACCACCCAGGA 5294
```

```
Qy       5282 TGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAAAGGAGTGGCTATGGAAGAAGG 5341
               ||   |||  ||   :||||||: ::||: ||:|: | |   |:|   |:|  ||  ||
Db       5295 CGCGAUGAAAAACGUCUGGCAAGUUUUAGUUAAUAUUAGAAAUGUGAAGAUGUCAGCGGG 5354

Qy       5342 ATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGTAGTACATAAAAATAATGTAAG 5401
               : |:|:||  : :|: :||||:: |: :|  : :|: : |:  |:| |||:||: :||
Db       5355 UUUCUGUCCGCUUUCUCUGGAGUUUGUGUCGGUGUGUAUUGUUUAUAGAAAUAAUAUAAA 5414

Qy       5402 AAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGGCTCGCCAATTGAACTCACTGA 5461
              |  |||:::||| ||    |::   |  |:|| ||||||   ||| |: ||||: ||  ||
Db       5415 AUUAGGUUUGAGAGAGAAGAUUACAAACGUGAGAGACGGAGGGCCCAUGGAACUUACAGA 5474

Qy       5462 AAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGCTGTGAAACTCGAAAAGGTTC- 5520
              | | |: |::|| |||::| :||| || |: || |:| |  : |  |: | |||| ::|
Db       5475 AGAAGUCGUUGAUGAGUUCAUGGAAGAUGUCCCUAUGUCGAUCAGGCUUGCAAAGUUUCG 5534

Qy       5521 -----------CGGAAAACAAAAAAGAAATGGTAGGTAATAATGTTAATAAT-------- 5561
                         |||| |   | |       ||| || ||:  :| :||:
Db       5535 AUCUCGAACCGGAAAAAAGAGUGAUGUCCGCAAAGGAAAAAUAGUAGUAAUGAUCGGUC 5594

Qy       5562 -------AAGAAAATAAATAACAGTGGTAAGAAGGTTTTAAAATTGAGGAAATTGAGGA 5614
                     || || |    |:|  | :| :||| |    :     ||:        |   || |
Db       5595 AGUGCCGAACAAGAACUAUAGAAAUGUUAAGGAUUUUGGAGGAAUGAGUUUUAAAAAGAA 5654

Qy       5615 TAATGTAAGTGATGACGAGT---------CTATCGCGTCATCGAGTACGTTTTAATCAAT 5665
              :||: :||  ||:|| || :         |: :|||   |:||  : ||::::|   ||:
Db       5655 UAAUUUAAUCGAUGAUGAUUCGGAGGCUACUGUCGCCGAAUCGGAUUCGUUUUA---AAU 5711

Qy       5666 ATGCCTTATACAATCAACTCTCCGAGCCAATTTGTTTACTTATCTTCCGCTTACGCAGAT 5725
              |:| |::| |  |:||   |:||     || :: |: : |:: :| :| || :  || ||
Db       5712 AUGUCUUACAGUAUCACUACUCCAUCUCAGUUCGUGUUCUUGUCAUCAGCGUGGGCCGAC 5771

Qy       5726 CCTGTGCAGCTGATCAATCTGTGTACAAATGCATTGGGTAACCAGTTTCAAACGCAACAA 5785
              ||  :  || : |: ||: : :|:|| ||:|| :: || || |||:::||||| ||||||
Db       5772 CCAAUAGAGUUAAUUAAUUUAUGUACUAAUGCCUUAGGAAAUCAGUUUCAAACACAACAA 5831

Qy       5786 GCTAGGACAACAGTCCAACAGCAATTTGCGGATGCCTGGAAACCTGTGCCTAGTATGACA 5845
              ||: | ||     |: |||    |||::     || |   :|||||||:     ||     : ||
Db       5832 GCUCGAACUGUCGUUCAAAGACAAUUCAGUGAGGUGUGGAAACCUUCACCACAAGUAACU 5891

Qy       5846 GTGAGATTTCCTGCATCGGATTTCTATGTGTATAGATATAATTCGACGCTTGATCCGTTG 5905
              |: || :: ||:|     ·|| ::   | |:|:| || :| ||: ||      : || ||| :
Db       5892 GUUAGGUUCCCUGACAGUGACUUUAAGGUGUACAGGUACAAUGCGGUAUUAGACCCGCUA 5951

Qy       5906 ATCACGGCGTTATTAAATAGCTTTGATACTAGAAATAGAATAATAGAGGTTGATAATCAA 5965
               :||| ||   : ::|    :    :: ||  ||:|||||:||||:||:|||  |::|| ||:||
Db       5952 GUCACAGCACUGUUAGGUGCAUUCGACACUAGAAAUAGAAUAAUAGAAGUUGAAAAUCAG 6011

Qy       5966 CCCGCACCGAATACTACTGAAATCGTTAACGCGACTCAGAGGGTAGACGATGCTACTGTA 6025
               |    || |  ||: | || |    :  | || ||:|  || |:|||||| || || |:
Db       6012 GCGAACCCCACGACUGCCGAGACGUUAGAUGCUACUCGUAGAGUAGACGACGCAACGGUG 6071

Qy       6026 GCTATAAGGGCTTCAATCAATAATTTGGCTAATGAACTGGTTCGTGGAACTGGCATGTTC 6085
              || |:||||     | |: ||:||:::      ||| :| :  | |||||| ||      :
Db       6072 GCCAUAAGGAGCGCGAUAAAUAAUUUAAUAGUAGAAUUGAUCAGAGGAACCGGAUCUUAU 6131

Qy       6086 AATCAAGCAGGCTTTGAGACTGCTAGTGGACTTGTCTGGACCACAACTCCGGCTACTTAG 6145
              ||:|      :: ||||   |:   :||  : |: :||||| |   :|| || ||:
Db       6132 AAUCGGAGCUCUUUCGAGAGCUCUUCUGGUUUGGUUUGGACCUCUGGUCCUGCAACU--- 6188

Qy       6146 CTATTGTTGTGAGATTTCCTAAAATAAAGTCGCTGAAGACTTAAAATTCAGGGTGGCTGA 6205
               :   |: |: |    : | :|| | | |     | :    | |   ||   ||  |:||
Db       6189 -UGAGGUAGUCAAGAUGCAUAAUAAAUAACGGAUUGUGUCCGUAAUCACA-CGUGGUGCG 6246

Qy       6206 TACCAAAATCAGCAGTGGTTGTTCGTCCACTTAAATATAACGATTGTCATATCTGGATCC 6265
              :|| | ||     ||:| :: : | :||||::|||:  || | ::|:  : :  |   ·|
Db       6247 UACGAUAACGCAUAGUGUUUUUCCCUCCACUUAAAUCGAAGGGUUGU-GUCUUGGAUCGC 6305

Qy       6266 AACAGTTAAACCATGTGATGGTGTATACTGTGGTATGGCGTAAAACATCGGAGAGGTTCG 6325
                  |: |||              :|:||    | | |     ||  |   ||| ||::||
Db       6306 GCGGGUCAAAUGUAUAUGGUUCAUAUACAUCCGCAGGCACGUAAUAAAGCGAGGGGUUCG 6365

Qy       6326 AATCCTCCCCTAACCGCCGGTAGCGGCCCA 6355
              ||:|| ||| : ||| ||||:|| ||||||
Db       6366 AAUCCCCCCGUUACCCCCGGUAGGGGCCCA 6395


RESULT 4
US-10-338-592-2
; Sequence 2, Application US/10338592
; Publication No. US20030208792A1
; GENERAL INFORMATION:
;  APPLICANT: Fitchen, John H.
;  APPLICANT:  Beachy, Roger N.
;  TITLE OF INVENTION: METHOD FOR USING TOBACCO MOSAIC VIRUS TO
;  TITLE OF INVENTION:  OVERPRODUCE PEPTIDES AND PROTEINS
;  FILE REFERENCE: TSRI 312.1C1
;  CURRENT APPLICATION NUMBER: US/10/338,592
;  CURRENT FILING DATE:  2003-01-07
;  PRIOR APPLICATION NUMBER: US 09/401,415
;  PRIOR FILING DATE: 1999-09-21
;  PRIOR APPLICATION NUMBER: US 08/687,559
;  PRIOR FILING DATE: 1996-11-18
;  PRIOR APPLICATION NUMBER: PCT/US95/01467
;  PRIOR FILING DATE: 1995-02-03
;  PRIOR APPLICATION NUMBER: US 08/192,477
;  PRIOR FILING DATE: 1994-02-03
;  NUMBER OF SEQ ID NOS: 32
;  SOFTWARE: FastSEQ for Windows Version 4.0
; SEQ ID NO 2
;   LENGTH: 6395
;   TYPE: DNA
;   ORGANISM: Tobacco mosaic virus
US-10-338-592-2

  Query Match             38.8%;  Score 2466.4;  DB 17;  Length 6395;
  Best Local Similarity   63.0%;  Pred. No. 0;
  Matches 4023;  Conservative    0;  Mismatches 2301;  Indels   66;  Gaps   11;

Qy         20 ACAACAACAATTAAAACAAAAACAACATATTACAAACAACAAACAACAACAATGGCACAC 79
              || |  |  |  |||  | |||||||||    |    || |    ||||  ||||||||| ||
Db         18 ACCAACAACAACAAACAACAAACAACATTACAATTACTATTTACAATTACAATGGCATAC 77

Qy         80 ATACAATCTATAATTAGCAACGCCCTTCTTGAAAGCGTGAGTGGTAAAAACACTCTCGTT 139
              | |||  |     |  |      ||  | || || |   ||   | || || |||  |   | ||
Db         78 ACACAGACAGCTACCACATCAGCTTTGCTGGACACTGTCCGAGGAAACAACTCCTTGGTC 137

Qy        140 AATGACCTTGCAAGAAGGCGCATGTACGATACGGCCGTGGAAGAATTTAACGCCCGCGAC 199
              ||||| || ||||    | ||  | ||||| || || || ||||| |||||||| || |||
Db        138 AATGATCTAGCAAAGCGTCGTCTTTACGACACAGCGGTTGAAGAGTTTAACGCTCGTGAC 197

Qy        200 CGTAGACCAAAGGTCAACTTTTCCAAAACTATTAGCGAAGAGCAAACGCTTCTAGTCTCC 259
              || || || ||||| |||||||| |||     || ||||| ||||| |||||| | |   ||
Db        198 CGCAGGCCCAAGGTGAACTTTTCAAAAGTAATAAGCGAGGAGCAGACGCTTATTGCTACC 257

Qy        260 AACGCGTACCCGGAGTTCCAGATTACCTTTTATAATACTCAAAATGCCGTACACAGTTTG 319
                 ||||| || || ||||| ||||| ||||||||| || |||||||||| ||       |
Db        258 CGGGCGTATCCAGAATTCCAAATTACATTTTATAACACGCAAAATGCCGTGCATTCGCTT 317

Qy        320 GCTGGAGGTTTGAGAGCATTAGAATTGGAATATCTGATGCTACAAGTTCCCTATGGATCG 379
              || || || ||| || | |||||| ||||||||||||||| | ||| ||||||| |||||
Db        318 GCAGGTGGATTGCGATCTTTAGAACTGGAATATCTGATGATGCAAATTCCCTACGGATCA 377

Qy        380 CCGACATATGATATAGGTGGGAACTTTGCAGCACATTTGTTCAAAGGCAGGGATTACGTG 439
                ||| ||||| ||||| ||||| |||||| | ||| ||||||| ||    | |   || ||
Db        378 TTGACTTATGACATAGGCGGGAATTTTGCATCGCATCTGTTCAAGGGACGAGCATATGTA 437

Qy        440 CATTGCTGTATGCCCAATCTGGACATACGAGATATAATGAGGCACGAAGGACAAAAGGAC 499
              || ||||| |||||||| |||||| | ||||| || ||| ||||||||| || || |||
Db        438 CACTGCTGCATGCCCAACCTGGACGTTCGAGACATCATGCGGCACGAAGGCCAGAAAGAC 497

Qy        500 TCAATTGAGATGTATTTGTCCAGATTGTCTCGTTCTAACAAGGTAATTCCTGAGTTTCAA 559
                 ||||| | ||  | || ||  |       |         ||   | | ||  | || |||
Db        498 AGTATTGAACTATACCTTTCTAGGCTAGAGAGAGGGGGGAAAACAGTCCCCAACTTCCAA 557

Qy        560 AGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAAGTCTGCTGCTCTAAAACTTTT 619
```

```
Db        558 AAGGAAGCATTTGACAGATACGCAGAAATTCCTGAAGACGCTGTCTGTCACAATACTTTC 617

Qy        620 CAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGAAGATACGCTGTTGCTCTGCAC 679

Db        618 CAGACAATGCGACATCAGCCGATGCAGCAATCAGGCAGAGTGTATGCCATTGCGCTACAC 677

Qy        680 AGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCGTTAATATCTAAGAATATACAT 739

Db        678 AGCATATATGACATACCAGCCGATGAGTTCGGGGCGGCACTCTTGAGGAAAAATGTCCAT 737

Qy        740 GTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTACTAGACCAGACGGAGGTTACG 799

Db        738 ACGTGCTATGCCGCTTTCCACTTCTCTGAGAACCTGCTTCTTGAAGATTCATACGTCAAT 797

Qy        800 CTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGATGATGTTTCTTTTTTCTTTGCT 859

Db        798 TTGGACGAAATCAACGCGTGTTTTTCGCGCGATGGAGACAAGTTGACCTTTTCTTTTGCA 857

Qy        860 GATGAAAGTACTTTAAATTATAGTCATAAATACAAAAATATCTTGCATTATGTAGTTAAA 919

Db        858 TCAGAGAGTACTCTTAATTATTGTCATAGTTATTCTAATATTCTTAAGTATGTGTGCAAA 917

Qy        920 TCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAGGAATTTTTAGTCACTAGGGTT 979

Db        918 ACTTACTTCCCGGCCTCTAATAGAGAGGTTTACATGAAGGAGTTTTTAGTCACCAGAGTT 977

Qy        980 AATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTATATTCTGTACAAGAGTGTTAGA 1039

Db        978 AATACCTGGTTTTGTAAGTTTTCTAGAATAGATACTTTTCTTTTGTACAAAGGTGTGGCC 1037

Qy       1040 CAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATGGAAGACGCCTTTGCTTACAAG 1099

Db       1038 CATAAAAGTGTAGATAGTGAGCAGTTTTATACTGCAATGGAAGACGCATGGCATTACAAA 1097

Qy       1100 AAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTTAGAGACACGGCTTCGGTTAAC 1159

Db       1098 AAGACTCTTGCAATGTGCAACAGCGAGAGAATCCTCCTTGAGGATTCATCATCAGTCAAT 1157

Qy       1160 TTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCGCTGTTTGAGGGTTCTATTACC 1219

Db       1158 TACTGGTTTCCCAAAATGAGGGATATGGTCATCGTACCATTATTCGACATTTCTTTGGAG 1217

Qy       1220 AGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGTGACTTCGTTTACACAGTGCTT 1279

Db       1218 ACTAGTAAGAGGACGCGCAAGGAAGTCTTAGTGTCCAAGGATTTCGTGTTTACAGTGCTT 1277

Qy       1280 AATCATATCAGAACATATCAAGCCAAAGCGTTAACTTACCAGAACGTATTATCTTTCGTG 1339

Db       1278 AACCACATTCGAACATACCAGGCGAAAGCTCTTACATACGCAAATGTTTTGTCCTTTGTC 1337

Qy       1340 GAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACTGCTAGGTCTGAATGGGATGTA 1399

Db       1338 GAATCGATTCGATCGAGGGTAATCATTAACGGTGTGACAGCGAGGTCCGAATGGGATGTG 1397

Qy       1400 GATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTCTTGCAGACTAAGCTGGCTGCG 1459

Db       1398 GACAAATCTTTGTTACAATCCTTGTCCATGACGTTTTACCTGCATACTAAGCTTGCCGTT 1457

Qy       1460 CTTCAAGACGATATAGTAATGGGAAAGTTTCGGTGCTTGGATAAGACCACTTCTGAACTT 1519

Db       1458 CTAAAGGATGACTTACTGATTAGCAAGTTTAGTCTCGGTTCGAAAACGGTGTGCCAGCAT 1517

Qy       1520 ATTTGGGATGAGGTGGGCAAATTTTTTGGAAACGTTTTCCCCACTATCAAAGAGAGATTG 1579

Db       1518 GTGTGGGATGAGATTTCGCTGGCGTTTGGGAACGCATTTCCCTCCGTGAAAGAGAGGCTC 1577

Qy       1580 GTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTGAAGATCAAGATCCCAGATCTG 1639

Db       1578 TTGAACAGGAAACTTATCAGAGTGGCAGGCGACGCATTAGAGATCAGGGTGCCTGATCTA 1637

Qy       1640 TATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACCAAGTCTGAGGAGTTACCGCAT 1699

Db       1638 TATGTGACCTTCCACGACAGATTAGTGACTGAGTACAAGGCCTCTGTGGACATGCCTGCG 1697

Qy       1700 CTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATGTACGACGCGTTATCAGAATTA 1759

Db       1698 CTTGACATTAGGAAGAAGATGGAAGAAACGGAAGTGATGTACAATGCACTTTCAGAGTTA 1757

Qy       1760 TCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAGTTCAAAGACATGTGCAAGGCT 1819

Db       1758 TCGGTGTTAAGGGAGTCTGACAAATTCGATGTTGATGTTTTTCCCAGATGTGCCAATCT 1817

Qy       1820 TTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTTGCAGTGGCCGAGAATAGAAGC 1879

Db       1818 TTGGAAGTTGACCCAATGACGGCAGCGAAGGTTATAGTCGCGGTCATGAGCAATGAGAGC 1877

Qy       1880 GGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAATGTGGCTAAGGCTCT------T 1933

Db       1878 GGTCTGACTCTCACATTTGAACGACCTACTGAGGCGAATGTTGCGCTAGCTTTACAGGAT 1937

Qy       1934 AAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCGACATCCGAAGAGGTGAACGTA 1993

Db       1938 CAAGAGAAGGCTTCAGAAGGTGCTTTGGTAGTTACCTCAAGAGAAGTTGAAGAACCGTCC 1997

Qy       1994 AATAAATTTTCTATTGCTGAGAAAGGAGATTGCCTGTGTGTGCAGAAAGTCATGGTTTG 2053

Db       1998 ATGAAGGGTTCGATGGCCAGAGGAGAGTTACAATTAGCTGGTCTTGCTGGAGATCATCCG 2057

Qy       2054 ACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTCAACGATTTCCATAAGGCTTGC 2113

Db       2058 GAGTCGTCCTATTCTAAGAACGAGGAGATAGAGTCTTTAGAGCAGTTTCATATGGCAACG 2117

Qy       2114 GTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTCTACACTGGCTCACTCAAAGTT 2173

Db       2118 GCAGATTCGTTAATTCGTAAGCAGATGAGCTCGATTGTGTACACGGGTCCGATTAAAGTT 2177

Qy       2174 CAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCGTTGTCCGCCACTGTATCAAAT 2233

Db       2178 CAGCAAATGAAAAACTTTATCGATAGCCTGGTAGCATCACTATCTGCTGCGGTGTCGAAT 2237

Qy       2234 CTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCTGATTCCAGGGAGAAAGTTGGT 2293

Db       2238 CTCGTCAAGATCCTCAAAGATACAGCTGCTATTGACCTTGAAACCCGTCAAAAGTTTGGA 2297

Qy       2294 GTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCTGCGGCCAAAGGTCATTCATGG 2353

Db       2298 GTCTTGGATGTTGCATCTAGGAAGTGGTTAATCAAACCAACGGCCAAGAGTCATGCATGG 2357

Qy       2354 GGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCACTTCTATCTTATGAAGGAGAT 2413

Db       2358 GGTGTTGTTGAAACCCACGCGAGGAAGTATCATGTGGCGCTTTTGGAATATGATGAGCAG 2417

Qy       2414 AGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTATCATCTGATACAATGGTATAT 2473

Db       2418 GGTGTGGTGACATGCGATGATTGGAGAAGAGTAGCTGTCAGCTCTGAGTCTGTTGTTTAT 2477

Qy       2474 TCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATGAGAGACGGTGAACCCCACGAA 2533

Db       2478 TCCGACATGGCGAAACTCAGAACTCTGCGCAGACTGCTTCGAAACGGAGAACCGCATGTC 2537

Qy       2534 CCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGTTGTGGAAAGTACAAAGGAGAT 2593

Db       2538 AGTAGCGCAAAGGTTGTTCTTGTGGACGGAGTTCCGGGCTGTGGGAAAACCAAAGAAATT 2597

Qy       2594 TTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTTCCTGGAAAACAAGCTGCTGCT 2653

Db       2598 CTTTCCAGGGTTAATTTTGATGAAGATCTAATTTTAGTACCTGGGAAGCAAGCCGCGGAA 2657

Qy       2654 ATGATCAGAAGAAGGGCTAATTCATCTGGACTGATAAGAGCCACAATGGACAATGTGAGA 2713

Db       2658 ATGATCAGAAGACGTGCGAATTCCTCAGGGATTATTGTGGCCACGAAGGACAACGTTAAA 2717

Qy       2714 ACGGTAGATTCACTTCTAATGCAT---------CCAAAACCGCGATCACACAAGAGGCTT 2764

Db       2718 ACCGTTGATTCTTTCATGATGAATTTTGGGAAAAGCACACGCTGTCAGTTCAAGAGGTTA 2777
```

```
Qy       2765 TTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTTAACTTCCTGGTGCTTATCTCT 2824

Db       2778 TTCATTGATGAAGGGTTGATGTTGCATACTGGTTGTGTTAATTTCTTGTGGCGATGTCA 2837

Qy       2825 GGTTGCGACATCGCATACATTTACGGAGATACACAGCAGATTCCTTTCATTAACAGAGTT 2884

Db       2838 TTGTGCGAAATTGCATATGTTTACGGAGACACACAGCAGATTCCATACATCAATAGAGTT 2897

Qy       2885 CAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAAGTGGATGAAGTTGAGATGAGG 2944

Db       2898 TCAGGATTCCCGTACCCCGCCCATTTTGCCAAATTGGAAGTTGACGAGGTGGAGACACGC 2957

Qy       2945 AGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTCCTACAATCGAAGTACGAAGGA 3004

Db       2958 AGAACTACTCTCCGTTGTCCAGCCGATGTCACACATTATCTGAACAGGAGATATGAGGGC 3017

Qy       3005 GCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCATCTGAGATGATAGGCGGTAAG 3064

Db       3018 TTTGTCATGAGCACTTCTTCGGTTAAAAAGTCTGTTTCGCAGGAGATGGTCGGCGGAGCC 3077

Qy       3065 GGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGGAAAATTGTAACTTTCACTCAGGCT 3124

Db       3078 GCCGTGATCAATCCGATCTCAAAACCCTTGCATGGCAAGATCCTGACTTTTACCCAATCG 3137

Qy       3125 GATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTGAACACCGTTCATGAGATCCAA 3184

Db       3138 GATAAAGAAGCTCTGCTTTCAAGAGGGTATTCAGATGTTCACACTGTGCATGAAGTGCAA 3197

Qy       3185 GGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACGGCAACTCCACTGACTCTGATT 3244

Db       3198 GGCGAGACATACTCTGATGTTTCACTAGTTAGGTTAACCCCTACACCAGTCTCCATCATT 3257

Qy       3245 TCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGACACACAAAGAGCTTCAAATAT 3304

Db       3258 GCAGGAGACAGCCCACATGTTTTGGTCGCATTGTCAAGGCACACCTGTTCGCTCAAGTAC 3317

Qy       3305 TACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGTGATTTGTCTTCTTTAAGCTCC 3364

Db       3318 TACACTGTTGTTATGGATCCTTTAGTTAGTATCATTAGAGATCTAGAGAAACTTAGCTCG 3377

Qy       3365 TTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGATAGCAATTACAGATGGATGCA 3424

Db       3378 TACTTGTTAGATATGTATAAGGTCGATGCAGGAACACAATAGCAATTACAGATTGACTCG 3437

Qy       3425 GTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAATCAGGAGACTTTCCAGATCTA 3484

Db       3438 GTGTTCAAAGGTTCCAATCTTTTTGTTGCAGCGCCAAAGACTGGTGATATTTCTGATATG 3497

Qy       3485 CAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACTATACTTAACAAGTATGATGCT 3544

Db       3498 CAGTTTTACTATGATAAGTGTCTCCCAGGCAACAGCACCATGATGAATAATTTTGATGCT 3557

Qy       3545 GTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAGGATTGTGTTCTTGATTTTTCC 3604

Db       3558 GTTACCATGAGGTTGACTGACATTTCATTGAATGTCAAAGATTGCATATTGGATATGTCT 3617

Qy       3605 AAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTAGAGCCAGTTTTGCGTACCGCG 3664

Db       3618 AAGTCTGTTGCTGCGCCTAAGGATCAAATCAAACCACTAATACCTATGGTACGAACGGCG 3677

Qy       3665 GCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTGGTTGCAATGATTAAAAGAAAT 3724

Db       3678 GCAGAAATGCCACGCCAGACTGGACTATTGGAAAATTTAGTGGCGATGATTAAAAGGAAC 3737

Qy       3725 TTCAACGCACCAGACCTGACGGGGACGATTGACATTGAGAGCACCGCATCTGTTGTAGTA 3784

Db       3738 TTTAACGCACCCGAGTTGTCTGGCATCATTGATATTGAAAATACTGCATCTTTAGTTGTA 3797

Qy       3785 GATAAGTTTTTTGATAGCTATTTTATTAAAAAAGAAAAATACACAAAAAATATTGCTGGA 3844

Db       3798 GATAAGTTTTTTGATAGTTATTTGCTTAAAGAAAAAAGAAAACCAAATAAAAATGTTTCT 3857

Qy       3845 GTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAACAGGAAAGAAGTACTATTGGAC 3904

Db       3858 TTGTTCAGTAGAGAGTCTCTCAATAGATGGTTAGAAAAGCAGGAACAGGTAACAATAGGC 3917

Qy       3905 GACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATCGATCAGTACAAGCACATGATC 3964

Db       3918 CAGCTCGCAGATTTTGATTTTGTAGATTTGCCAGCAGTTGATCAGTACAGACACATGATT 3977

Qy       3965 AAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAGAATGAATACCCTGCTCTGCAA 4024

Db       3978 AAAGCACAACCCAAGCAAAAATTGGACACTTCAATCCAAACGGAGTACCCGGCTTTGCAG 4037

Qy       4025 ACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTGGCCGGTTTCTCA---GAGCTT 4081

Db       4038 ACGATTGTGTACCATTCAAAAAAGATCAATGCAATATTTGGCCCGTTGTTTAGTGAGCTT 4097

Qy       4082 ACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTTCTTTTCTTTACTAGGAAAACT 4141

Db       4098 ACTAGGCAATTACTGGACAGTGTTGATTCGAGCAGATTTTTGTTTTTCACAAGAAAGACA 4157

Qy       4142 CCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCGCACGTTCCTATGGATGTGTTA 4201

Db       4158 CCAGCGCAGATTGAGGATTTCTTCGGAGATCTCGACAGTCATGTGCCGATGGATGTCTTG 4217

Qy       4202 GAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAGTTTCATTGTGCTGTAGAGTAT 4261

Db       4218 GAGCTGGATATATCAAAATACGACAAATCTCAGAATGAATTCCACTGTGCAGTAGAATAC 4277

Qy       4262 GAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCCGAAGTGTGGAAACAAGGGCAC 4321

Db       4278 GAGATCTGGCGAAGATTGGGTTTTGAAGACTTCTTGGGAGAAGTTTGGAAACAAGGGCAT 4337

Qy       4322 AGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAGACATGTCTGTGGTATCAAAGG 4381

Db       4338 AGAAAGACCACCCTCAAGGATTATACCGCAGGTATAAAAACTTGCATCTGGTATCAAAGA 4397

Qy       4382 AAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTTATAATAGCAGCTTGCTTGGGT 4441

Db       4398 AAGAGCGGGGACGTCACGACGTTCATTGGAAACACTGTGATCATTGCTGCATGTTTGGCC 4457

Qy       4442 TCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTTTGTGGAGACGATTCCGTTTTG 4501

Db       4458 TCGATGCTTCCGATGGAGAAAATAATCAAAGGAGCCTTTTGCGGTGACGATAGTCTGCTG 4517

Qy       4502 TATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCATGTGCTAATCTCATGTGGAAT 4561

Db       4518 TACTTTCCAAAGGGTTGTGAGTTTCCGGATGTGCAACACTCCGCGAATCTTATGTGGAAT 4577

Qy       4562 TTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTTTGTGGTAGATACATCATACAC 4621

Db       4578 TTTGAAGCAAAACTGTTTAAAAAACAGTATGGATACTTTTGCGGAAGATATGTAATACAT 4637

Qy       4622 CATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAGTTGATCTCCAAACTTGGGGCA 4681

Db       4638 CACGACAGAGGATGCATTGTGTATTACGATCCCCTAAAGTTGATCTCGAAACTTGGTGCT 4697

Qy       4682 AAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGGGTGTCTTTGTGCGATGTTGCT 4741

Db       4698 AAACACATCAAGGATTGGGAACACTTGGAGGAGTTCAGAAGGTCTCTTTGTGATGTTGCT 4757

Qy       4742 TGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTGAACGCAGCTATCAAGGAGGTT 4801

Db       4758 GTTTCGTT---GAACAATTGTGCGTATTACACACAGTTGGACGACGCTGTATGGGAGGTT 4814

Qy       4802 CATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGTGTTAACAAATTTTTGTGTGAT 4861

Db       4815 CATAAGACCGCCCCTCCAGGTTCGTTTGTTTATAAAAGTCTGGTGAAGTATTTGTCTGAT 4874

Qy       4862 AAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAGTCTCAGAGATACTGTCAAAAT 4921

Db       4875 AAAGTTCTTTTTAGAAGTTTGTTTATAGATGGCTCTAGTTGTTAAAGGAAAAGTGAATAT 4934

Qy       4922 TAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACTTCCGGCATTCATGACTAAGGT 4981
```

```
           |  ||||| || || ||  | |||  |||  ||||  | ||| |  |  | ||    ||
Db   4935 CAATGAGTTTATCGACCTGACAAAAATGGAGAAGATCTTACCGTCGATGTTTACCCCTGT 4994

Qy   4982 CAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGCTGTTAAGAATGATAGTCTTTC 5041
           ||||||||||     || |  || || || || |||| |  | |||||||     | ||
Db   4995 AAAGAGTGTTATGTGTTCCAAAGTTGATAAAATAATGGTTCATGAGAATGAGTCATTGTC 5054

Qy   5042 TGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAAAGGGTATGTGTGCTTAGCTGA 5101
           || ||  |  | |||||||| |||||| |  || | |  || || || || ||||| |
Db   5055 AGAGGTGAACCTTCTTAAAGGAGTTAAGCTTATTGATAGTGGATACGTCTGTTTAGCCGG 5114

Qy   5102 TTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTGCCGTGGTGGTGTCAGTGTTTG 5161
          |||||| ||  | || ||||||||  | || || || ||| | || ||||| || || ||
Db   5115 TTTGGTCGTCACGGGCGAGTGGAACTTGCCTGACAATTGCAGAGGAGGTGTGAGCGTGTG 5174

Qy   5162 TATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAACGCTGGGTGCGTATCACGCCCC 5221
          | | || || || || ||| ||||     | || || || || ||  | ||  || |  |
Db   5175 TCTGGTGGACAAAAGGATGGAAAGAGCCGACGAGGCCACTCTCGGATCTTACTACACAGC 5234

Qy   5222 TGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAATTATTCAATAACATCCGAGGA 5281
           |||   || || |  |||   || ||| |  | || |||||| | |||||  || ||||
Db   5235 AGCTGCAAAGAAAAGATTTCAGTTCAAGGTCGTTCCCAATTATGCTATAACCACCCAGGA 5294

Qy   5282 TGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAAAGGAGTGGCTATGGAAGAAGG 5341
           ||   |||  ||   |||||||| ||||| ||||| | |   |||   |||  ||  ||
Db   5295 CGCGATGAAAAACGTCTGGCAAGTTTTAGTTAATATTAGAAATGTGAAGATGTCAGCGGG 5354

Qy   5342 ATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGTAGTACATAAAAATAATGTAAG 5401
           | ||||||  | ||| ||||||| || ||  | ||| | ||  ||| ||||||| |||
Db   5355 TTTCTGTCCGCTTTCTCTGGAGTTTGTGTCGGTGTGTATTGTTTATAGAAATAATATAAA 5414

Qy   5402 AAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGGCTCGCCAATTGAACTCACTGA 5461
          |  ||||||||| ||    |||   |  |||| ||||||   ||| || ||||| || ||
Db   5415 ATTAGGTTTGAGAGAGAAGATTACAAACGTGAGAGACGGAGGGCCCATGGAACTTACAGA 5474

Qy   5462 AAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGCTGTGAAACTCGAAAAGGTTC- 5520
          | | || ||||| |||||| |||| || || || ||| |  | |  || | |||| |||
Db   5475 AGAAGTCGTTGATGAGTTCATGGAAGATGTCCCTATGTCGATCAGGCTTGCAAAGTTTCG 5534

Qy   5521 -----------CGGAAAACAAAAAAGAAATGGTAGGTAATAATGTTAATAAT-------- 5561
                        |||| |   | |       ||| || |||  || ||||
Db   5535 ATCTCGAACCGGAAAAAAGAGTGATGTCCGCAAAGGGAAAAATAGTAGTAATGATCGGTC 5594

Qy   5562 -------AAGAAAATAAATAACAGTGGTAAGAAGGGTTTTAAAATTGAGGAAATTGAGGA 5614
                 || || |   |||  | || |||| |   |     |||       |   || |
Db   5595 AGTGCCGAACAAGAACTATAGAAATGTTAAGGATTTTGGAGGAATGAGTTTTAAAAAGAA 5654

Qy   5615 TAATGTAAGTGATGACGAGT---------CTATCGCGTCATCGAGTACGTTTTAATCAAT 5665
          |||| |||  ||||| || |         || ||||   ||||  | |||||||   |||
Db   5655 TAATTTAATCGATGATGATTCGGAGGCTACTGTCGCCGAATCGGATTCGTTTTA---AAT 5711

Qy   5666 ATGCCTTATACAATCAACTCTCCGAGCCAATTTGTTTACTTATCTTCCGCTTACGCAGAT 5725
          ||| |||| |  ||||   ||||    || || || | ||| || || || |  || ||
Db   5712 ATGTCTTACAGTATCACTACTCCATCTCAGTTCGTGTTCTTGTCATCAGCGTGGGCCGAC 5771

Qy   5726 CCTGTGCAGCTGATCAATCTGTGTACAAATGCATTGGGTAACCAGTTTCAAACGCAACAA 5785
          ||  |  || | || ||| | ||||| ||||| || || || ||||||||||| ||||||
Db   5772 CCAATAGAGTTAATTAATTTATGTACTAATGCCTTAGGAAATCAGTTTCAAACACAACAA 5831

Qy   5786 GCTAGGACAACAGTCCAACAGCAATTTGCGGATGCCTGGAAACCTGTGCCTAGTATGACA 5845
          ||| | ||    || |||   |||||    || |  |||||||||   ||     | ||
Db   5832 GCTCGAACTGTCGTTCAAAGACAATTCAGTGAGGTGTGGAAACCTTCACCACAAGTAACT 5891

Qy   5846 GTGAGATTTCCTGCATCGGATTTCTATGTGTATAGATATAATTCGACGCTTGATCCGTTG 5905
          || || || ||||     || ||  | ||||| || || ||| ||    | || ||| |
Db   5892 GTTAGGTTCCCTGACAGTGACTTTAAGGTGTACAGGTACAATGCGGTATTAGACCCGCTA 5951

Qy   5906 ATCACGGCGTTATTAAATAGCTTTGATACTAGAAATAGAATAATAGAGGTTGATAATCAA 5965
           |||| ||  | |||  |   || || |||||||||||||||||||| ||||| |||||
Db   5952 GTCACAGCACTGTTAGGTGCATTCGACACTAGAAATAGAATAATAGAAGTTGAAAATCAG 6011

Qy   5966 CCCGCACCGAATACTACTGAAATCGTTAACGCGACTCAGAGGGTAGACGATGCTACTGTA 6025
           |    || |  ||| | ||||   |  | || ||||  || |||||||| || || ||
Db   6012 GCGAACCCCACGACTGCCGAAACGTTAGATGCTACTCGTAGAGTAGACGACGCAACGGTG 6071

Qy   6026 GCTATAAGGGCTTCAATCAATAATTTGGCTAATGAACTGGTTCGTGGAACTGGCATGTTC 6085
          || ||||||    | || ||||||||       ||| || |  | ||||| ||    |
Db   6072 GCCATAAGGAGCGCGATAAATAATTTAATAGTAGAATTGATCAGAGGAACCGGATCTTAT 6131

Qy   6086 AATCAAGCAGGCTTTGAGACTGCTAGTGGACTTGTCTGGACCACAACTCCGGCTACTTAG 6145
          ||||        || ||||   ||  |||  | || |||||| |   ||| || |||
Db   6132 AATCGGAGCTCTTTCGAGAGCTCTTCTGGTTTGGTTTGGACCTCTGGTCCTGCAACT--- 6188

Qy   6146 CTATTGTTGTGAGATTTCCTAAAATAAAGTCGCTGAAGACTTAAAATTCAGGGTGGCTGA 6205
           |   || || |   | | ||| | | |   | |   | |   ||   ||  ||||
Db   6189 -TGAGGTAGTCAAGATGCATAATAAATAACGGATTGTGTCCGTAATCACA-CGTGGTGCG 6246

Qy   6206 TACCAAAATCAGCAGTGGTTGTTCGTCCACTTAAATATAACGATTGTCATATCTGGATCC 6265
          ||| | ||     |||| || | | |||||||||||  || | ||||  | |  |    |
Db   6247 TACGATAACGCATAGTGTTTTTCCCTCCACTTAAATCGAAGGGTTGT-GTCTTGGATCGC 6305

Qy   6266 AACAGTTAAACCATGTGATGGTGTATACTGTGGTATGGCGTAAAACATCGGAGAGGTTCG 6325
              || |||             |||||    | | |     ||  |   ||| ||||||
Db   6306 GCGGGTCAAATGTATATGGTTCATATACATCCGCAGGCACGTAATAAAGCGAGGGGTTCG 6365

Qy   6326 AATCCTCCCCTAACCGCCGGTAGCGGCCCA 6355
          ||||| ||| | ||| ||||||| ||||||
Db   6366 AATCCCCCCGTTACCCCCGGTAGGGGCCCA 6395

RESULT 5
US-09-962-527-2
; Sequence 2, Application US/09962527
; Publication No. US20030049813A1
;   GENERAL INFORMATION:
;        APPLICANT: GARGER, STEPHEN
;                   HOLTZ, R. BARRY
;                   McCULLOCH, MICHAEL
;                   TURPEN, THOMAS
;        TITLE OF INVENTION: A PROCESS FOR ISOLATING AND
;                            PURIFYING VIRUSES SOLUBLE PROTEINS AND PEPTIDES
;                            FROM PLANT SOURCES
;        NUMBER OF SEQUENCES: 5
;        CORRESPONDENCE ADDRESS:
;             ADDRESSEE: Howrey & Simon
;             STREET: 1299 Pennsylvania Avenue N.W.
;             CITY: Washington
;             STATE: DC
;             COUNTRY: USA
;             ZIP: 20004
;        COMPUTER READABLE FORM:
;             MEDIUM TYPE: Diskette
;             COMPUTER: IBM Compatible
;             OPERATING SYSTEM: DOS
;             SOFTWARE: FastSEQ for Windows Version 2.0
;        CURRENT APPLICATION DATA:
;             APPLICATION NUMBER: US/09/962,527
;             FILING DATE: 24-Sep-2001
;             CLASSIFICATION: <Unknown>
;        PRIOR APPLICATION DATA:
;             APPLICATION NUMBER: 09/037,751
;             FILING DATE: 10-march-1998
;        ATTORNEY/AGENT INFORMATION:
;             NAME: Halluin, Albert P
;             REGISTRATION NUMBER: 25,277
;             REFERENCE/DOCKET NUMBER: 00801.0140.999
;        TELECOMMUNICATION INFORMATION:
;             TELEPHONE: 650-463-8109
;             TELEFAX: 650-463-8400
;             TELEX: <Unknown>
;   INFORMATION FOR SEQ ID NO: 2:
;        SEQUENCE CHARACTERISTICS:
;             LENGTH: 6439 base pairs
;             TYPE: nucleic acid
;             STRANDEDNESS: single
;             TOPOLOGY: unknown
```

```
;        MOLECULE TYPE: Genomic RNA
;        SEQUENCE DESCRIPTION: SEQ ID NO: 2:
US-09-962-527-2

  Query Match             38.6%;  Score 2455.4;  DB 10;  Length 6439;
  Best Local Similarity   44.8%;  Pred. No. 0;
  Matches 2772;  Conservative 1147;  Mismatches 2206;  Indels   60;  Gaps    8;

Qy        20 ACAACAACAATTAAAACAAAAACAACATATTACAAACAACAAACAACAACAATGGCACAC 79
             || |  |  |  |||  | ||||||||:   |   || |   ||||  ||||:|||| ||
Db        18 ACCAACAACAACAAACAACAAACAACAUUACAAUUACUAUUUACAAUUACAAUGGCAUAC 77

Qy        80 ATACAATCTATAATTAGCAACGCCCTTCTTGAAAGCGTGAGTGGTAAAAACACTCTCGTT 139
             | |||  |    |  |     ||  : |: || |  |:  | || || ||| |  : |:
Db        78 ACACAGACAGCUACCACAUCAGCUUUGCUGGACACUGUCCGAGGAAACAACUCCUUGGUC 137

Qy       140 AATGACCTTGCAAGAAGGCGCATGTACGATACGGCCGTGGAAGAATTTAACGCCCGCGAC 199
             ||:|| |: ||||   | ||  : :|||| || || |: ||||| :::||||| || |||
Db       138 AAUGAUCUAGCAAAGCGUCGUCUUUACGACACAGCGGUUGAAGAGUUUAACGCUCGUGAC 197

Qy       200 CGTAGACCAAAGGTCAACTTTTCCAAAACTATTAGCGAAGAGCAAACGCTTCTAGTCTCC 259
             || || || ||||: |||::::| ||||  |: ||||| |||| ||||:: : |   ||
Db       198 CGCAGGCCCAAGGUGAACUUUUCAAAAGUAAUAAGCGAGGAGCAGACGCUUAUUGCUACC 257

Qy       260 AACGCGTACCCGGAGTTCCAGATTACCTTTTATAATACTCAAAATGCCGTACACAGTTTG 319
                |||:| || ||| ::||| |::|| ::::|:|| || |||||:||||:  ||     :
Db       258 CGGGCGUAUCCAGAAUUCCAAAUUACAUUUUAUAACACGCAAAAUGCCGUGCAUUCGCUU 317

Qy       320 GCTGGAGGTTTGAGAGCATTAGAATTGGAATATCTGATGCTACAAGTTCCCTATGGATCG 379
             || || || ::| || | ::|||| :||||:|:|:||:| : ||| ::|||:| |||:|
Db       318 GCAGGUGGAUUGCGAUCUUUAGAACUGGAAUAUCUGAUGAUGCAAAUUCCCUACGGAUCA 377

Qy       380 CCGACATATGATATAGGTGGGAACTTTGCAGCACATTTGTTCAAAGGCAGGGATTACGTG 439
               ||| :|:|| |:||| ||||| :::||| | ||: :|::||| ||  | |  :| |:
Db       378 UUGACUUAUGACAUAGGCGGGAAUUUUGCAUCGCAUCUGUUCAAGGGACGAGCAUAUGUA 437

Qy       440 CATTGCTGTATGCCCAATCTGGACATACGAGATATAATGAGGCACGAAGGACAAAAGGAC 499
             || :||:| |:|||||| |:|||| : ||||| |: |:| |||||||||| || || |||
Db       438 CACUGCUGCAUGCCCAACCUGGACGUUCGAGACAUCAUGCGGCACGAAGGCCAGAAAGAC 497

Qy       500 TCAATTGAGATGTATTTGTCCAGATTGTCTCGTTCTAACAAGGTAATTCCTGAGTTTCAA 559
                |::||  : :|  : :| ||  :     |       ||   | : ||  | :: |||
Db       498 AGUAUUGAACUAUACCUUUCUAGGCUAGAGAGAGGGGGGAAAACAGUCCCCAACUUCCAA 557

Qy       560 AGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAAGTCTGCTGCTCTAAAACTTTT 619
             | ||| || ::: |||| :| ||||||  :||  | || |    |:|    || ||:::
Db       558 AAGGAAGCAUUUGACAGAUACGCAGAAAUUCCUGAAGACGCUGUCUGUCACAAUACUUUC 617

Qy       620 CAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGAAGATACGCTGTTGCTCTGCAC 679
             |||      |||   || |||    || |    || |||   :| ||  ::|| |: |||
Db       618 CAGACAAUGCGACAUCAGCCGAUGCAGCAAUCAGGCAGAGUGUAUGCCAUUGCGCUACAC 677

Qy       680 AGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCGTTAATATCTAAGAATATACAT 739
             ||  : :|:|| |: || |   |:|||:: || || ||  :  :    || ||: : ||:
Db       678 AGCAUAUAUGACAUACCAGCCGAUGAGUUCGGGGCGGCACUCUUGAGGAAAAAUGUCCAU 737

Qy       740 GTATGTTATGCAGCTTTCCATTTTGGCAGAAGCATTATTACTAGACCAGACGGAGGTTACG 799
                :| :|:|| ||:: |   ::  | ||     :  : |: ||  |  |   | |:  |
Db       738 ACGUGCUAUGCCGCUUUCCACUUCUCCGAGAACCUGCUUCUUGAAGAUUCAUACGUCAAU 797

Qy       800 CTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGATGATGTTTCTTTTTTCTTTGCT 859
              :  | ||||:   |||   :::     | || || ||  |  :  | ::::  :::||
Db       798 UUGGACGAAAUCAACGCGUGUUUUUCGCGCGAUGGAGACAAGUUGACCUUUUCUUUUGCA 857

Qy       860 GATGAAAGTACTTTAAATTATAGTCATAAATACAAAAATATCTTGCATTATGTAGTTAAA 919
                || ||:||: : ||::|: |:||:|  :|    ||:|:  :  | :|:|:    |||
Db       858 UCAGAGAGUACUCUUAAUUAUUGUCAUAGUUAUUCUAAUAUUCUUAAGUAUGUGUGCAAA 917

Qy       920 TCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAGGAATTTTTAGTCACTAGGGTT 979
              |::||:: || || :|:| :|||   |:::|| : |||| :::::||:||| || |::
Db       918 ACUUACUUCCCGGCCUCUAAUAGAGAGGUUUACAUGAAGGAGUUUUUAGUCACCAGAGUU 977

Qy       980 AATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTATATTCTGTACAAGAGTGTTAGA 1039
             ||:|| :||::::|:|| ::: | | | :|||:|| : : :: :|:||||  |:|:
Db       978 AAUACCUGGUUUUGUAAGUUUUCUAGAAUAGAUACUUUUCUUUUGUACAAAGGUGUGGCC 1037

Qy      1040 CAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATGGAAGACGCCTTTGCTTACAAG 1099
             ||   | |    ||:||:|| |||:: :|:   || |:||||||||| :    ::||||
Db      1038 CAUAAAAGUGUAGAUAGUGAGCAGUUUUAUACUGCAAUGGAAGACGCAUGGCAUUACAAA 1097

Qy      1100 AAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTTAGAGACACGGCTTCGGTTAAC 1159
             || ||  : || |:|: |||||  || |||    :| ::   ||  |  | :| |: ||
Db      1098 AAGACUCUUGCAAUGUGCAACAGCGAGAGAAUCCUCCUUGAGGAUUCAUCAUCAGUCAAU 1157

Qy      1160 TTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCGCTGTTTGAGGGTTCTATTACC 1219
             :  :||:: || || |:|| ||| |:||: |: |:|||  : :: ||   ::|: :
Db      1158 UACUGGUUUCCCAAAAUGAGGGAUAUGGUCAUCGUACCAUUAUUCGACAUUUCUUUGGAG 1217

Qy      1220 AGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGTGACTTCGTTTACACAGTGCTT 1279
             |  |  |||| |||  | |  || |:| : |:       || ::||: :  ||||:||::
Db      1218 ACUAGUAAGAGGACGCGCAAGGAAGUCUUAGUGUCCAAGGAUUUCGUGUUUACAGUGCUU 1277

Qy      1280 AATCATATCAGAACATATCAAGCCAAAGCGTTAACTTACCAGAACGTATTATCTTTCGTG 1339
             || || |:  |||||:| || ||||| : || :||   || |: :: :|  : |: |:
Db      1278 AACCACAUUCGAACAUACCAGGCGAAAGCUCUUACAUACGCAAAUGUUUUGUCCCUUGUC 1337

Qy      1340 GAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACTGCTAGGTCTGAATGGGATGTA 1399
             || :| |:  ||:|  | |: |: |: || ||:|: || ||| |:| ||:||||:|:
Db      1338 GAAUCGAUUCGAUCGAGGGUAAUCAUUAACGGUGUGACAGCGAGGUCCGAAUGGGAUGUG 1397

Qy      1400 GATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTCTTGCAGACTAAGCTGGCTGCG 1459
             || ||| |  :  : ||| |::|:| |:|||| :: : | :||| ||:||||: || |
Db      1398 GACAAAUCUUUGUUACAAUCCUUGUCCAUGACGUUUUACCUGCAUACUAAGCUUGCCGUU 1457

Qy      1460 CTTCAAGACGATATAGTAATGGGAAAGTTTCGGTGCTTGGATAAGACCACTTCTGAACTT 1519
             |:  | || ||  :| : |:  | |||:::  |   |      || ||     :   | | :
Db      1458 CUAAAGGAUGACUUACUGAUUAGCAAGUUUAGUCUCGGUUCGAAAACGGUGUGCCAGCAU 1517

Qy      1520 ATTTGGGATGAGGTGGGCAAATTTTTTGGAAACGTTTTCCCCACTATCAAAGAGAGATTG 1579
              : :||||:||| :         :::|| ||||  :: ||| |  : ||||||| :
Db      1518 GUGUGGGAUGAGAUUUCGCUGGCGUUUGGGAACGCAUUUCCCUCCGUGAAAGAGAGACUC 1577

Qy      1580 GTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTGAAGATCAAGATCCCAGATCTG 1639
              :|| |||||||| :: :    |:    |   | ||  :  |||:|| | : || ||:|:
Db      1578 UUGAACAGGAAACUUAUCAGAGUGGCAGGCGACGCAUUAGAGAUCAGGGUGCCUGAUCUA 1637

Qy      1640 TATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACCAAGTCTGAGGAGTTACCGCAT 1699
             :|:|: || :  |  ||||| :: |:  |:|| :|||     :|:| |||  : ||
Db      1638 UAUGUGACCUUCCACGACAGAUUAGUGACUGAGUACAAGGCCUCUGUGGACAUGCCUGCG 1697

Qy      1700 CTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATGTACGACGCGTTATCAGAATTA 1759
             |: || |: | |||| |  : |||||| | ||    |:|:|| | ||  : :|||| ::|
Db      1698 CUUGACAUUAGGAAGAAGAUGGAAGAAACGGAAGUGAUGUACAAUGCACUUUCAGAGUUA 1757

Qy      1760 TCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAGTTCAAAGACATGTGCAAGGCT 1819
             :|  :  : | ||   |:|| || ::|||: : |     ::     | |:|:|| |  |:
Db      1758 UCGGUGUUAAGGGAGUCUGACAAAUUCGAUGUUGAUGUUUUUUCCCAGAUGUGCCAAUCU 1817

Qy      1820 TTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTTGCAGTGGCCGAGAATAGAAGC 1879
             :: || |::   ||      ||||||    |: |: |: || |:       ||:   |||
Db      1818 UUGGAAGUUGACCCAAUGACGGCAGCGAAGGUUAUAGUCGCGGUCAUGAGCAAUGAGAGC 1877

Qy      1880 GGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAATGTGGCTAAGGCTCT------T 1933
             ||: : ||:|: || :::||    || || |||| |||:|: ||   |||: :      :
Db      1878 GGUCUGACUCUCACAUUUGAACGACCUACUGAGGCGAAUGUUGCGCUAGCUUUACAGGAU 1937

Qy      1934 AAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCGACATCCGAAGAGGTGAACGTA 1993
              ||   | ||| :| || |  |   :     ::    | | |   |  || |
Db      1938 CAAGAGAAGGCUUCAGAAGGUGCAUUGGUAGUUACCUCAAGAGAAGUUGAAGAACCGUCC 1997

Qy      1994 AATAAATTTTCTATTGCTGAGAAAGGGAGATTGCCTGTGTGTGCAGAAAGTCATGGTTTG 2053
             |  ||   ::| |: ||      || |  |      |   |:   |   |  |:  :  |
Db      1998 AUGAAGGGUUCGAUGGCCAGAGGAGAGUUACAAUUAGCUGGUCUUGCUGGAGAUCAUCCG 2057

Qy      2054 ACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTCAACGATTTCCATAAGGCTTGC 2113
               |    |  | :   || || ||||| : |||:|  :  |  | :: ||:| |||
```

```
Db        2058 GAGUCGUCCUAUUCUAAGAACGAGGAGAUAGAGUCUUUAGAGCAGUUUCAUAUGGCGACG 2117

Qy        2114 GTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTCTACACTGGCTCACTCAAAGTT 2173
               |  ||:    : |::   ||||| |:|   :|| ::|: :|||| ||  |  : ||||::
Db        2118 GCAGAUUCGUUAAUUCGUAAGCAGAUGAGCUCGAUUGUGUACACGGGUCCGAUUAAAGUU 2177

Qy        2174 CAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCGTTGTCCGCCACTGTATCAAAT 2233
               || ||||:||| |||: : : || ||  :|| ||| :|  : :| ||  | |: :| ||:
Db        2178 CAGCAAAUGAAAAACUUUAUCGAUAGCCUGGUAGCAUCACUAUCUGCUGCGGUGUCGAAU 2237

Qy        2234 CTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCTGATTCCAGGGAGAAAGTTGGT 2293
               |:   ||||   |: || ||:  ||  |    :||   :||  || |  |  ||  ::||
Db        2238 CUCGUCAAGAUCCUCAAAGAUACAGCUGCUAUUGACCUUGAAACCCGUCAAAAGUUUGGA 2297

Qy        2294 GTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCTGCGGCCAAAGGTCATTCATGG 2353
               |: : |||:|:  | :  |  |||:|| :  :||||||  |||||||  |:||: ||:||
Db        2298 GUCUUGGAUGUUGCAUCUAGGAAGUGGUUAAUCAAACCAACGGCCAAGAGUCAUGCAUGG 2357

Qy        2354 GGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCACTTCTATCTTATGAAGGAGAT 2413
               || |::|:        ||  | ||||        :   || |:: :    :|:|| |   |
Db        2358 GGUGUUGUUGAAACCCACGCGAGGAAGUAUCAUGUGGCGCUUUUGGAAUAUGAUGAGCAG 2417

Qy        2414 AGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTATCATCTGATACAATGGTATAT 2473
                |  :||:|||       || :|||| || |: ||:|:    :|:||  |  : |: :|:
Db        2418 GGUGUGGUGACAUGCGAUGAUUGGAGAAGAGUAGCUGUUAGCUCUGAGUCUGUUGUUUAU 2477

Qy        2474 TCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATGAGAGACGGTGAACCCCACGAA 2533
               :| || |: || || |:|  || :|:| | | |    :  || |||| |||| || |
Db        2478 UCCGACAUGGCGAAACUCAGAACUCUGCGCAGACUGCUUCGAAACGGAGAACCGCAUGUC 2537

Qy        2534 CCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGTTGTGGAAAGTACAAAGGAGAT 2593
                 :|  |||||| : |: |::|:||| || |: || || :|:|||||   ||||| |  :
Db        2538 AGUAGCGCAAAGGUUGUUCUUGUGGACGGAGUUCCGGGCUGUGGAAAAACCAAAGAAAUU 2597

Qy        2594 TTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTTCCTGGAAAACAAGCTGCTGCT 2653
                ::   ||  :: |: ::||:|| ||: : |: :: |: ||:|| || ||||| || |
Db        2598 CUUUCCAGGGUUAAUUUUGAUGAAGAUCUAAUUUUAGUACCUGGGAAGCAAGCCGCGGAA 2657

Qy        2654 ATGATCAGAAGAAGGGCTAATTCATCTGGACTGATAAGAGCCACAATGGACAATGTGAGA 2713
               |:||:||||||| | || ||::| :| ||  : |:    ||||| | |||||| |: | |
Db        2658 AUGAUCAGAAGACGUGCGAAUUCCUCAGGGAUUAUUGUGGCCACGAAGGACAACGUUAAA 2717

Qy        2714 ACGGTAGATTCACTTCTAATGCATCCAAAACCGCGATCACA---------CAAGAGGCTT 2764
               || |: ||::|  :  : |:| |:          |  |||          ||||||| :
Db        2718 ACCGUUGAUUCUUUCAUGAUGAAUUUUGGGAAAAGCACACGCUGUCAGUUCAAGAGGUUA 2777

Qy        2765 TTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTTAACTTCCTGGTGCTTATCTCT 2824
               :: |::||:||||||::||:| :||| || ||::|:|::|| :: |: |:|   |: :|
Db        2778 UUCAUUGAUGAAGGGUUGAUGUUGCAUACUGGUUGUGUUAAUUUUCUUGUGGCGAUGUCA 2837

Qy        2825 GGTTGCGACATCGCATACATTTACGGAGATACACAGCAGATTCCTTTCATTAACAGAGTT 2884
                  :|||| |: |||:|  :::||||||| ||||||||||::|| : ||: || ||||::
Db        2838 UUGUGCGAAAUUGCAUAUGUUUACGGAGACACACAGCAGAUUCCAUACAUCAAUAGAGUU 2897

Qy        2885 CAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAAGTGGATGAAGTTGAGATGAGG 2944
                     ::||||:| |||    ||::::|  ||  :| |||: || || |: ||||   |
Db        2898 UCAGGAUUCCCGUACCCCGCCCAUUUUGCCAAAUUGGAAGUUGACGAGGUGGAGACACGC 2957

Qy        2945 AGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTCCTACAATCGAAGTACGAAGGA 3004
               || || || |:  | :| ||||  ||:|: |    ::  |:  |   ||  :| || ||
Db        2958 AGAACUACUCUCCGUUGUCCAGCCGAUGUCACACAUUAUCUGAACAGGAGAUAUGAGGGC 3017

Qy        3005 GCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCATCTGAGATGATAGGCGGTAAG 3064
                  |: |  | |||::|  |:  ||   :| |: :|    ||||:| : |||||
Db        3018 UUUGUCAUGAGCACUUCUUCGGUUAAAAAGUCUGUUUCGCAGGAGAUGGUCGGCGGAGCC 3077

Qy        3065 GGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGGAAAATTGTAACTTTCACTCAGGCT 3124
               |  |:  : ||     : :| |||||  :  | || || |:  : ||::: || ||   |
Db        3078 GCCGUGAUCAAUCCGAUCUCAAAACCCUUGCAUGGCAAGAUCCUGACUUUUACCCAAUCG 3137

Qy        3125 GATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTGAACACCGTTCATGAGATCCAA 3184
               ||:|||   |   :       |  || :|:    |:|:  |||| |: ||:||  : |||
Db        3138 GAUAAAGAAGCUCUGCUUUCAAGAGGGUAUUCAGAUGUUCACACUGUGCAUGAAGUGCAA 3197
```

```
Qy        3185 GGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACGGCAACTCCACTGACTCTGATT 3244
               || || || :     ||:|: :| |: |: || :: ||  | || ||| :  |  : |::
Db        3198 GGCGAGACAUACUCUGAUGUUUCACUAGUUAGGUUAACCCCUACACCAGUCUCCAUCAUU 3257

Qy        3245 TCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGACACACAAAGAGCTTCAAATAT 3304
                |          ||| ||:|:: : |:|||  :| | || |||||          :||| :|
Db        3258 GCAGGAGACAGCCCACAUGUUUUGGUCGCAUUGUCAAGGCACACCUGUUCGCUCAAGUAC 3317

Qy        3305 TACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGTGATTTGTCTTCTTTAAGCTCC 3364
               :|||| |: |:  : ||:||:::||:    |: |::|| ||: :          : |||:|
Db        3318 UACACUGUUGUUAUGGAUCCUUUAGUUAGUAUCAUUAGAGAUCUAGAGAAACUUAGCUCG 3377

Qy        3365 TTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGATAGCAATTACAGATGGATGCA 3424
               : | : ::||| |:|:|:|: ||: || |||| |    |:|||||::||||||: ||  |
Db        3378 UACUUGUUAGAUAUGUAUAAGGUCGAUGCAGGAACACAAUAGCAAUUACAGAUUGACUCG 3437

Qy        3425 GTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAATCAGGAGACTTTCCAGATCTA 3484
               |:|::||||||:   ||:|: :::|: ||| | || ||  | || ||  :: | ||: :
Db        3438 GUGUUCAAAGGUUCCAAUCUUUUUGUUGCAGCGCCAAAGACUGGUGAUAUUUCUGAUAUG 3497

Qy        3485 CAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACTATACTTAACAAGTATGATGCT 3544
               |||:: :| :| ||:   :| |:||| || || || || |:  : || || : :||:||:
Db        3498 CAGUUUUACUAUGAUAAGUGUCUCCCAGGCAACAGCACCAUGAUGAAUAAUUUUGAUGCU 3557

Qy        3545 GTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAGGATTGTGTTCTTGATTTTTCC 3604
               |::||||:||||::   :|| | :    : ||:|: || ||::|  :  : ||: : :|
Db        3558 GUUACCAUGAGGUUGACUGACAUUUCAUUGAAUGUCAAAGAUUGCAUAUUGGAUAUGUCU 3617

Qy        3605 AAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTAGAGCCAGTTTTGCGTACCGCG 3664
               ||   : ::|    ||| ||||||    |     |   |:|   ||  :  : || || |||
Db        3618 AAGUCUGUUCGUGCGCCUAAGGAUCAAAUCAAACCACUAAUACCUAUGGUACGAACGGCG 3677

Qy        3665 GCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTGGTTGCAATGATTAAAAGAAAT 3724
               || |||  |||| |     | ||||:| : |||||: : |: || |:||::||||||||
Db        3678 GCAGAAAUGCCACGCCAGACUGGACUAUUGGAAAAUUUAGUGGCGAUGAUUAAAAGAAAC 3737

Qy        3725 TTCAACGCACCAGACCTGACGGGGACGATTGACATTGAGAGCACCGCATCTGTTGTAGTA 3784
               :: |||||||| ||  :| | ||  ||::|| |::|| |   || |||:|: : |: |:|
Db        3738 UUUAACGCACCCGAGUUGUCUGGCAUCAUUGAUAUUGAAAAUACUGCAUCUUUGGUUGUA 3797

Qy        3785 GATAAGTTTTTTGATAGCTATTTTATTAAAAAAGAAAAATACACAAAAAATATTGCTGGA 3844
               ||:|||::::::||:|| :|:::  ::||| || ||| |  |  |||| ||  | :| :
Db        3798 GAUAAGUUUUUUGAUAGUUAUUUGCUUAAAGAAAAAAGAAAACCAAAUAAAAAUGUUUCU 3857

Qy        3845 GTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAACAGGAAAGAAGTACTATTGGAC 3904
                :| : |  |  || :|  :  |  |||:||::  |||||   | || | |:||  | : | |
Db        3858 UUGUUCAGUAGAGAGUCUCUCAAUAGAUGGUUAGAAAAGCAGGAACAGGUAACAAUAGGC 3917

Qy        3905 GACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATCGATCAGTACAAGCACATGATC 3964
                |  : ||  | :   |::::   ||: :||| ||  :  ||:|||:|||  ||||:||:
Db        3918 CAGCUCGCAGAUUUUGAUUUUGUGGAUUUGCCAGCAGUUGAUCAGUACAGACACAUGAUU 3977

Qy        3965 AAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAGAATGAATACCCTGCTCTGCAA 4024
               || || |||||| ||||| || ::||||  ::|||: || |   || :|||| ||: :|||
Db        3978 AAAGCACAACCCAAACAAAAGUUGGACACUUCAAUCCAAACGGAGUACCCGGCUUUGCAG 4037

Qy        4025 ACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTGGCCGGTTTCT---CAGAGCTT 4081
               || |::|: :||||::| ||  |||:||| |  |: :: | |   :: :     ||||::
Db        4038 ACGAUUGUGUACCAUUCAAAAAAGAUCAAUGCAAUAUUCGGCCCGUUGUUUAGUGAGCUU 4097

Qy        4082 ACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTTCTTTTCTTTACTAGGAAAACT 4141
               || |||    : |: ||       ::||::| |  |  ::: : :: :: || || || ||
Db        4098 ACUAGGCAAUUACUGGACAGUGUUGAUUCGAGCAGAUUUUUGUUUUUCACAAGAAAGACA 4157

Qy        4142 CCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCGCACGTTCCTATGGATGTGTTA 4201
               ||||  ||||:: | || :: ::|   ||:|:||||   || |: || |:|||:|: ::
Db        4158 CCAGCGCAGAUUGAGGAUUUCUUCGGAGAUCUCGACAGUCAUGUGCCGAUGGAUGUCUUG 4217

Qy        4202 GAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAGTTTCATTGTGCTGTAGAGTAT 4261
               || |:|||:|: :| || :| || || :| ||||| || :: || :|:|| |:||| :|
Db        4218 GAGCUGGAUAUAUCAAAAUACGACAAAUCUCAGAAUGAAUUCCACUGUGCAGUAGAAUAC 4277
```

```
Qy       4262 GAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCCGAAGTGTGGAAACAAGGGCAC 4321
              || |: :||  ||||::|||: :  | || :: ::||  ||||: :|||||||||||||
Db       4278 GAGAUCUGGCGAAGAUUGGGUUUUGAAGACUUCUUGGGAGAAGUUUGGAAACAAGGGCAU 4337

Qy       4322 AGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAGACATGTCTGTGGTATCAAAGG 4381
              || || || ||  : |||||::| |  || || |: || || :|  : :||:|:|||||
Db       4338 AGAAAGACCACCCUCAAGGAUUAUACCGCAGGUAUAAAAACUUGCAUCUGGUAUCAAAGA 4397

Qy       4382 AAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTTATAATAGCAGCTTGCTTGGGT 4441
              || ||||| || |: || || ::||: || || ||:|: |: |: || || :| ::||
Db       4398 AAGAGCGGGGACGUCACGACGUUCAUUGGAAACACUGUGAUCAUUGCUGCAUGUUUGGCC 4457

Qy       4442 TCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTTTGTGGAGACGATTCCGTTTTG 4501
              :| |:| : ||||:||| ||  : |: |||||| || ::::| || |||||:    :  :|
Db       4458 UCGAUGCUUCCGAUGGAGAAAAUAAUCAAAGGAGCCUUUUGCGGUGACGAUAGUCUGCUG 4517

Qy       4502 TATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCATGTGCTAATCTCATGTGGAAT 4561
              :| :::||||||||::  || :: || ||  : ||    :  || ||:|: |:|:||||:
Db       4518 UACUUUCCAAAGGGUUGUGAGUUUCCGGAUGUGCAACACUCCGCGAAUCUUAUGUGGAAU 4577

Qy       4562 TTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTTTGTGGTAGATACATCATACAC 4621
              :::|| || ||||:|: :| |||   |:| || :||::::| || |||:|  : | |||
Db       4578 UUUGAAGCAAAACUGUUUAAAAAACAGUAUGGAUACUUUUGCGGAAGAUAUGUAAUACAU 4637

Qy       4622 CATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAGTTGATCTCCAAACTTGGGGCA 4681
              || || |  |||   |: |:|:|::| ||:||  : |||::||:|:| ||||::|| ||
Db       4638 CACGACAGAGGAUGCAUUGUGUAUUACGAUCCCCUAAAGUUGAUCUCGAAACUUGGUGCU 4697

Qy       4682 AAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGGGTGTCTTTGTGCGATGTTGCT 4741
              ||||| |:||||||::  || |||:: || |||:: ||   |:|: : :| ||:|::||:
Db       4698 AAACACAUCAAGGAUUGGGAACACUUGGAGGAGUUCAGAAGGUCUCUUUGUGAUGUUGCU 4757

Qy       4742 TGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTGAACGCAGCTATCAAGGAGGTT 4801
                ::|| :    || :|    :     :   | ||| :| |||  ||: :   |||||::
Db       4758 GUUUCGUUGAACAAUUGUGCGUA---UUACACACAGUUGGACGACGCUGUAUGGGAGGUU 4814

Qy       4802 CATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGTGTTAACAAATTTTTGTGTGAT 4861
              ||:|| |||||   :   ||::||:::| :: :||  |: :    || : :::|: :||:
Db       4815 CAUAAGACCGCCCCUCCAGGUUCGUUUGUUUAUAAAAGUCUGGUGAAGUAUUUGUCUGAU 4874

Qy       4862 AAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAGTCTCAGAGATACTGTCAAAAT 4921
              ||| :: : :::|||| :::|::: :| |:|||: :   : : | ||  |  |: || |:
Db       4875 AAAGUUCUUUUUAGAAGUUUGUUUAUAGAUGGCUCUAGUUGUUAAAGGAAAAGUGAAUAU 4934

Qy       4922 TAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACTTCCGGCATTCATGACTAAGGT 4981
               |  |||:: |: || |: :| |||  |||  |||:  : ||| |  :  : ||    |:
Db       4935 CAAUGAGUUUAUCGACCUGUCAAAAAUGGAGAAGAUCUUACCGUCGAUGUUUACCCCUGU 4994

Qy       4982 CAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGCTGTTAAGAATGATAGTCTTTC 5041
               |||||:|::|     :| |  |: || || |: |:|| :  : ||||:||     : :|
Db       4995 AAAGAGUGUUAUGUGUUCCAAAGUUGAUAAAAUAAUGGUUCAUGAGAAUGAGUCAUUGUC 5054

Qy       5042 TGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAAAGGGTATGTGTGCTTAGCTGA 5101
               || |:  |  : |::||||| |::||| :  :: | |  || :| |: :| ::||| |
Db       5055 AGAGGUGAACCUUCUUAAAGGAGUUAAGCUUAUUGAUAGUGGAUACGUCUGUUUAGCCGG 5114

Qy       5102 TTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTGCCGTGGTGGTGTCAGTGTTTG 5161
              :::||: |:  | || |||:||||  : || || || :|| | || ||:|: || |: :|
Db       5115 UUUGGUCGUCACGGGCGAGUGGAACUUGCCUGACAAUUGCAGAGGAGGUGUGAGCGUGUG 5174

Qy       5162 TATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAACGCTGGGTGCGTATCACGCCCC 5221
              : : |: || || || |:| ||||     | || || |  |: ||  | :|  || |  |
Db       5175 UCUGGUGGACAAAAGGAUGGAAAGAGCCGACGAGGCCACUCUCGGAUCUUACUACACAGC 5234

Qy       5222 TGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAATTATTCAATAACATCCGAGGA 5281
               ||:   || || |  :::   :: ||| :  : || ||::|: | |:|||  || ||||
Db       5235 AGCUGCAAAGAAAAGAUUUCAGUUCAAGGUCGUUCCCAAUUAUGCUAUAACCACCCAGGA 5294

Qy       5282 TGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAAAGGAGTGGCTATGGAAGAAGG 5341
               ||   |||  ||   :|||||||: ::||: ||:|: | |   |:|   |:|  ||  ||
Db       5295 CGCGAUGAAAAACGUCUGGCAAGUUUUAGUUAAUAUUAGAAAUGUGAAGAUGUCAGCGGG 5354

Qy       5342 ATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGTAGTACATAAAAATAATGTAAG 5401
               : |:|:||  : :|: :||||:: |: :|  : :|: : |:  |:| |||:||: :||
Db       5355 UUUCUGUCCGCUUUCUCUGGAGUUUGUGUCGGUGUGUAUUGUUUAUAGAAAUAAUAUAAA 5414

Qy       5402 AAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGGCTCGCCAATTGAACTCACTGA 5461
              |  |||:::||| ||    |::   |  |:|| ||||||   ||| |: ||||: || ||
Db       5415 AUUAGGUUUGAGAGAGAAGAUUACAAACGUGAGAGACGGAGGGCCCAUGGAACUUACAGA 5474

Qy       5462 AAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGCTGTGAAACTCGAAAAGGTTCC 5521
              | | |: |::|| |||::| :||| || |: || |:| |  : |  |: | |||| ::|
Db       5475 AGAAGUCGUUGAUGAGUUCAUGGAAGAUGUCCCUAUGUCGAUCAGGCUUGCAAAGUUUCG 5534

Qy       5522 GG------------AAAACAAAAAAGAAATGGTAGGTAATAATGTTAATAAT-------- 5561
                            |||| |   | |       ||| || ||:  :| :||:
Db       5535 AUCUCGAACCGGAAAAAAGAGUGAUGUCCGCAAAGGGAAAAAUAGUAGUAAUGAUCGGUC 5594

Qy       5562 -------AAGAAAATAAATAACAGTGGTAAGAAGGGTTTTAAAATTGAGGAAATTGAGGA 5614
                     || || |   |:|  | :| :||| |   :     ||:       |   || |
Db       5595 AGUGCCGAACAAGAACUAUAGAAAUGUUAAGGAUUUUGGAGGAAUGAGUUUUAAAAAGAA 5654

Qy       5615 TAATGTAAGTGATGACGAGT---------CTATCGCGTCATCGAGTACGTTTTAATCAAT 5665
              :||: :||  ||:|| || :         |: :|||   |:||  : ||::::|   ||:
Db       5655 UAAUUUAAUCGAUGAUGAUUCGGAGGCUACUGUCGCCGAAUCGGAUUCGUUUUA---AAU 5711

Qy       5666 ATGCCTTATACAATCAACTCTCCGAGCCAATTTGTTTACTTATCTTCCGCTTACGCAGAT 5725
              |:| |::| |  |:||   |:||    || :: |: : |:: :| :| || :  || ||
Db       5712 AUGUCUUACAGUAUCACUACUCCAUCUCAGUUCGUGUUCUUGUCAUCAGCGUGGGCCGAC 5771

Qy       5726 CCTGTGCAGCTGATCAATCTGTGTACAAATGCATTGGGTAACCAGTTTCAAACGCAACAA 5785
              ||  :  || : |: ||: : :|:|| ||:|| :: || || |||:::||||| ||||||
Db       5772 CCAAUAGAGUUAAUUAAUUUAUGUACUAAUGCCUUAGGAAAUCAGUUUCAAACACAACAA 5831

Qy       5786 GCTAGGACAACAGTCCAACAGCAATTTGCGGATGCCTGGAAACCTGTGCCTAGTATGACA 5845
              ||: | ||    |: |||    |||::    || |  :|||||||:   ||     : ||
Db       5832 GCUCGAACUGUCGUUCAAAGACAAUUCAGUGAGGUGUGGAAACCUUCACCACAAGUAACU 5891

Qy       5846 GTGAGATTTCCTGCATCGGATTTCTATGTGTATAGATATAATTCGACGCTTGATCCGTTG 5905
              |: || :: ||:|     || ::  | |:|:| || :| ||: ||    : || ||| :
Db       5892 GUUAGGUUCCCUGACAGUGACUUUAAGGUGUACAGGUACAAUGCGGUAUUAGACCCGCUA 5951

Qy       5906 ATCACGGCGTTATTAAATAGCTTTGATACTAGAAATAGAATAATAGAGGTTGATAATCAA 5965
               :||| ||  : ::|  :   :: || ||:|||||:||||:||:||| |::|| ||:||
Db       5952 GUCACAGCACUGUUAGGUGCAUUCGACACUAGAAAUAGAAUAAUAGAAGUUGAAAAUCAG 6011

Qy       5966 CCCGCACCGAATACTACTGAAATCGTTAACGCGACTCAGAGGGTAGACGATGCTACTGTA 6025
               |    || |  ||: | ||||   :  | || ||:|  || |:|||||| || || |:
Db       6012 GCGAACCCCACGACUGCCGAAACGUUAGAUGCUACUCGUAGAGUAGACGACGCAACGGUG 6071

Qy       6026 GCTATAAGGGCTTCAATCAATAATTTGGCTAATGAACTGGTTCGTGGAACTGGCATGTTC 6085
              || |:||||    | |: ||:||:::       ||| :| :  | ||||| ||    :
Db       6072 GCCAUAAGGAGCGCGAUAAAUAAUUUAAUAGUAGAAUUGAUCAGAGGAACCGGAUCUUAU 6131

Qy       6086 AATCAAGCAGGCTTTGAGACTGCTAGTGGACTTGTCTGGACCACAACTCCGGCTACTTAG 6145
              ||:|        :: ||||   |:  :||  : |: :||||| |   :|| || || :||
Db       6132 AAUCGGAGCUCUUUCGAGAGCUCUUCUGGUUUGGUUUGGACCUCUGGUCCUGCAACCUAG 6191

Qy       6146 CTATT 6150
              | |::
Db       6192 CAAUU 6196

RESULT 6
US-10-828-029-2
; Sequence 2, Application US/10828029
; Publication No. US20040171813A1
;  GENERAL INFORMATION:
;   APPLICANT: GARGER, STEPHEN
;              HOLTZ, R. BARRY
;              McCULLOCH, MICHAEL
;              TURPEN, THOMAS
;   TITLE OF INVENTION: A PROCESS FOR ISOLATING AND
;                       PURIFYING VIRUSES SOLUBLE PROTEINS AND PEPTIDES
;                       FROM PLANT SOURCES
;   NUMBER OF SEQUENCES: 5
```

```
;        CORRESPONDENCE ADDRESS:
;             ADDRESSEE: Howrey & Simon
;             STREET: 1299 Pennsylvania Avenue N.W.
;             CITY: Washington
;             STATE: DC
;             COUNTRY: USA
;             ZIP: 20004
;        COMPUTER READABLE FORM:
;             MEDIUM TYPE: Diskette
;             COMPUTER: IBM Compatible
;             OPERATING SYSTEM: DOS
;             SOFTWARE: FastSEQ for Windows Version 2.0
;        CURRENT APPLICATION DATA:
;             APPLICATION NUMBER: US/10/828,029
;             FILING DATE: 20-Apr-2004
;             CLASSIFICATION: <Unknown>
;        PRIOR APPLICATION DATA:
;             APPLICATION NUMBER: US/09/962,527
;             FILING DATE: 24-Sep-2001
;             APPLICATION NUMBER: 09/037,751
;             FILING DATE: 10-march-1998
;        ATTORNEY/AGENT INFORMATION:
;             NAME: Halluin, Albert P
;             REGISTRATION NUMBER: 25,277
;             REFERENCE/DOCKET NUMBER: 00801.0140.999
;        TELECOMMUNICATION INFORMATION:
;             TELEPHONE: 650-463-8109
;             TELEFAX: 650-463-8400
;             TELEX: <Unknown>
;   INFORMATION FOR SEQ ID NO: 2:
;        SEQUENCE CHARACTERISTICS:
;             LENGTH: 6439 base pairs
;             TYPE: nucleic acid
;             STRANDEDNESS: single
;             TOPOLOGY: unknown
;        MOLECULE TYPE: Genomic RNA
;        SEQUENCE DESCRIPTION: SEQ ID NO: 2:
US-10-828-029-2

  Query Match             38.6%;  Score 2455.4;  DB 19;  Length 6439;
  Best Local Similarity   44.8%;  Pred. No. 0;
  Matches 2772;  Conservative 1147;  Mismatches 2206;  Indels   60;  Gaps    8;

Qy         20 ACAACAACAATTAAAACAAAAACAACATATTACAAACAACAAACAACAACAATGGCACAC 79
              || |  |  |  |||  | ||||||||:   |   || |   ||||  ||||:|||| ||
Db         18 ACCAACAACAACAAACAACAAACAACAUUACAAUUACUAUUUACAAUUACAAUGGCAUAC 77

Qy         80 ATACAATCTATAATTAGCAACGCCCTTCTTGAAAGCGTGAGTGGTAAAAACACTCTCGTT 139
              | |||  |    |  |     ||  : |: || |  |:  | || || ||| |  : |:
Db         78 ACACAGACAGCUACCACAUCAGCUUUGCUGGACACUGUCCGAGGAAACAACUCCUUGGUC 137

Qy        140 AATGACCTTGCAAGAAGGCGCATGTACGATACGGCCGTGGAAGAATTTAACGCCCGCGAC 199
              ||:|| |: ||||   | ||  : :|||| || || |: ||||| :::||||| || |||
Db        138 AAUGAUCUAGCAAAGCGUCGUCUUUACGACACAGCGGUUGAAGAGUUUAACGCUCGUGAC 197

Qy        200 CGTAGACCAAAGGTCAACTTTTCCAAAACTATTAGCGAAGAGCAAACGCTTCTAGTCTCC 259
              || || || ||||: |||::::| |||   |: ||||| |||| ||||:: : |   ||
Db        198 CGCAGGCCCAAGGUGAACUUUUCAAAAGUAAUAAGCGAGGAGCAGACGCUUAUUGCUACC 257

Qy        260 AACGCGTACCCGGAGTTCCAGATTACCTTTTATAATACTCAAAATGCCGTACACAGTTTG 319
                 |||:| || || ::||| |::|| :::::|:|| || |||||:||||: ||     :
Db        258 CGGGCGUAUCCAGAAUUCCAAAUUACAUUUUAUAACACGCAAAAUGCCGUGCAUUCGCUU 317

Qy        320 GCTGGAGGTTTGAGAGCATTAGAATTGGAATATCTGATGCTACAAGTTCCCTATGGATCG 379
              || || || ::| || | ::|||| :||||:|:|:||:| : ||| ::|||:| |||:|
Db        318 GCAGGUGGAUUGCGAUCUUUAGAACUGGAAUAUCUGAUGAUGCAAAUUCCCUACGGAUCA 377

Qy        380 CCGACATATGATATAGGTGGGAACTTTGCAGCACATTTGTTCAAAGGCAGGGATTACGTG 439
                ||| :|:|| |:||| |||| :::||| | ||: :|::||| ||  | |  :| |:
Db        378 UUGACUUAUGACAUAGGCGGGAAUUUUGCAUCGCAUCUGUUCAAGGGACGAGCAUAUGUA 437

Qy        440 CATTGCTGTATGCCCAATCTGGACATACGAGATATAATGAGGCACGAAGGACAAAAGGAC 499
              || :||:| |:|||||| |:|||| : |||||| |: |:| |||||||||| || || |||
Db        438 CACUGCUGCAUGCCCAACCUGGACGUUCGAGACAUCAUGCGGCACGAAGGCCAGAAAGAC 497

Qy        500 TCAATTGAGATGTATTTGTCCAGATTGTCTCGTTCTAACAAGGTAATTCCTGAGTTTCAA 559
                 |::||  : :|  : :| ||  :     |       ||   | : ||  |  ::|||
Db        498 AGUAUUGAACUAUACCUUUCUAGGCUAGAGAGAGGGGGAAAAACAGUCCCCAACUUCCAA 557

Qy        560 AGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAAGTCTGCTGCTCTAAAACTTTT 619
              | ||| || ::: |||| :| ||||||  :||  | || |     |:|    || ||:::
Db        558 AAGGAAGCAUUUGACAGAUACGCAGAAAUUCCUGAAGACGCUGUCUGUCACAAUACUUUC 617

Qy        620 CAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGAAGATACGCTGTTGCTCTGCAC 679
              |||      |||   || |||    || |    || |||   :| ||  ::|| |: |||
Db        618 CAGACAAUGCGACAUCAGCCGAUGCAGCAAUCAGGCAGAGUGUAUGCCAUUGCGCUACAC 677

Qy        680 AGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCGTTAATATCTAAGAATATACAT 739
              ||  : :|:|| |: || |   |:|||:: || || ||  :  :    || ||: : ||:
Db        678 AGCAUAUAUGACAUACCAGCCGAUGAGUUCGGGGCGGCACUCUUGAGGAAAAAUGUCCAU 737

Qy        740 GTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTACTAGACCAGACGGAGGTTACG 799
                 :| :|:|| ||:: |   ::  | ||     :  : |: ||  |  |   | |: |
Db        738 ACGUGCUAUGCCGCUUUCCACUUCUCCGAGAACCUGCUUCUUGAAGAUUCAUACGUCAAU 797

Qy        800 CTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGATGATGTTTCTTTTTTCTTTGCT 859
               :  | ||||:   |||   :::     | || || ||  |  :  | ::::  :::||
Db        798 UUGGACGAAAUCAACGCGUGUUUUUCGCGCGAUGGAGACAAGUUGACCUUUUCUUUUGCA 857

Qy        860 GATGAAAGTACTTTAAATTATAGTCATAAATACAAAAATATCTTGCATTATGTAGTTAAA 919
                 || ||:||: : | ::|: |:||:|  :|    ||:|:  :  | :|:|:    |||
Db        858 UCAGAGAGUACUCUUAAUUAUUGUCAUAGUUAUUCUAAUAUUCUUAAGUAUGUGUGCAAA 917

Qy        920 TCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAGGAATTTTTAGTCACTAGGGTT 979
               |::||:: || || :|:| :|||   |:::|| : |||| :::::||:||| || |::
Db        918 ACUUACUUCCCGGCCUCUAAUAGAGAGGUUUACAUGAAGGAGUUUUUAGUCACCAGAGUU 977

Qy        980 AATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTATATTCTGTACAAGAGTGTTAGA 1039
              ||:|| :||::::|:|| ::: | | | :|||:|| : : :: :|:||||   |:|:
Db        978 AAUACCUGGUUUUGUAAGUUUUCUAGAAUAGAUACUUUUCUUUUGUACAAAGGUGUGGCC 1037

Qy       1040 CAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATGGAAGACGCCTTTGCTTACAAG 1099
              ||   | |    ||:||:|| |||:: :|:   || |:||||||| :    ::||||
Db       1038 CAUAAAAGUGUAGAUAGUGAGCAGUUUUAUACUGCAAUGGAAGACGCAUGGCAUUACAAA 1097

Qy       1100 AAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTTAGAGACACGGCTTCGGTTAAC 1159
              || ||  : || |:|: |||||  || |||    :| ::   ||  |  | :| |: ||
Db       1098 AAGACUCUUGCAAUGUGCAACAGCGAGAGAAUCCUCCUUGAGGAUUCAUCAUCAGUCAAU 1157

Qy       1160 TTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCGCTGTTTGAGGGTTCTATTACC 1219
              :  :||:: || || |:|| ||| |:||: |: |:|||  : :: ||   ::|: :
Db       1158 UACUGGUUUCCCAAAAUGAGGGAUAUGGUCAUCGUACCAUUAUUCGACAUUUCUUUGGAG 1217

Qy       1220 AGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGTGACTTCGTTTACACAGTGCTT 1279
              |  |  |||| |||  | |  || |:| : |:       || ::||: :  ||||:||::
Db       1218 ACUAGUAAGAGGACGCGCAAGGAAGUCUUAGUGUCCAAGGAUUUCGUGUUUACAGUGCUU 1277

Qy       1280 AATCATATCAGAACATATCAAGCCAAAGCGTTAACTTACCAGAACGTATTATCTTTCGTG 1339
              || || |:  |||||:| || || |||||  : || :||   || |: :: :|  : |:
Db       1278 AACCACAUUCGAACAUACCAGGCGAAAGCUCUUACAUACGCAAAUGUUUUGUCCCUUGUC 1337

Qy       1340 GAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACTGCTAGGTCTGAATGGGATGTA 1399
              || :| |:  ||:|  | |: |: |: || ||:|: || || |||:| |||:||||:|:
Db       1338 GAAUCGAUUCGAUCGAGGGUAAUCAUUAACGGUGUGACAGCGAGGUCCGAAUGGGAUGUG 1397

Qy       1400 GATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTCTTGCAGACTAAGCTGGCTGCG 1459
              || ||| |  :  : ||| ||::|:| |:|||| :: : | :||| ||:||||: || |
Db       1398 GACAAAUCUUUGUUACAAUCCUUGUCCAUGACGUUUUACCUGCAUACUAAGCUUGCCGUU 1457

Qy       1460 CTTCAAGACGATATAGTAATGGGAAAGTTTCGGTGCTTGGATAAGACCACTTCTGAACTT 1519
              |:  | || ||  :| : |:  | |||:::  |   |      || ||    :   | | :
Db       1458 CUAAAGGAUGACUUACUGAUUAGCAAGUUUAGUCUCGGUUCGAAAACGGUGUGCCAGCAU 1517

Qy       1520 ATTTGGGATGAGGTGGGCAAATTTTTTGGAAACGTTTTCCCCACTATCAAAGAGAGATTG 1579
               : :||||:||| :          :::|| ||||  :: ||| |  : ||||||| :
Db       1518 GUGUGGGAUGAGAUUUCGCUGGCGUUUGGGAACGCAUUUCCCUCCGUGAAAGAGAGACUC 1577
```

```
Qy          1580 GTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTGAAGATCAAGATCCCAGATCTG 1639
                  :|| ||||||||| :: :    |:    |   | ||  :  |||:|| | : || ||:|:
Db          1578 UUGAACAGGAAACUUAUCAGAGUGGCAGGCGACGCAUUAGAGAUCAGGGUGCCUGAUCUA 1637

Qy          1640 TATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACCAAGTCTGAGGAGTTACCGCAT 1699
                 :|:|: || :   | ||||| :: |:  |:|| :|||     :|:| |||  : ||
Db          1638 UAUGUGACCUUCCACGACAGAUUAGUGACUGAGUACAAGGCCUCUGUGGACAUGCCUGCG 1697

Qy          1700 CTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATGTACGACGCGTTATCAGAATTA 1759
                 |: || |: | |||| |  : |||||| | ||    |:|:|| | ||  : :|||| ::|
Db          1698 CUUGACAUUAGGAAGAAGAUGGAAGAAACGGAAGUGAUGUACAAUGCACUUUCAGAGUUA 1757

Qy          1760 TCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAGTTCAAAGACATGTGCAAGGCT 1819
                 :|  :  : | ||   |:|| || ::|||: : |     ::     | |:|| |  |:
Db          1758 UCGGUGUUAAGGGAGUCUGACAAAUUCGAUGUUGAUGUUUUUUCCCAGAUGUGCCAAUCU 1817

Qy          1820 TTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTTGCAGTGGCCGAGAATAGAAGC 1879
                 :: || |::   ||      ||||||    |: |: |: || |:       ||:   |||
Db          1818 UUGGAAGUUGACCCAAUGACGGCAGCGAAGGUUAUAGUCGCGGUCAUGAGCAAUGAGAGC 1877

Qy          1880 GGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAATGTGGCTAAGGCTCT------T 1933
                 ||: : ||:|: || :::||    || || |||| |||:|: ||    ||: :      :
Db          1878 GGUCUGACUCUCACAUUUGAACGACCUACUGAGGCGAAUGUUGCGCUAGCUUUACAGGAU 1937

Qy          1934 AAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCGACATCCGAAGAGGTGAACGTA 1993
                  ||   | ||| :| || |  |   :     ::    | | |   |  || |
Db          1938 CAAGAGAAGGCUUCAGAAGGUGCAUUGGUAGUUACCUCAAGAGAAGUUGAAGAACCGUCC 1997

Qy          1994 AATAAATTTTCTATTGCTGAGAAAGGGAGATTGCCTGTGTGTGCAGAAAGTCATGGTTTG 2053
                 |  ||   ::| |: ||      || |  |      |   |:   |   |  |:  :  |
Db          1998 AUGAAGGGUUCGAUGGCCAGAGGAGAGUUACAAUUAGCUGGUCUUGCUGGAGAUCAUCCG 2057

Qy          2054 ACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTCAACGATTTCCATAAGGCTTGC 2113
                   |    |  | :   || || ||||| : |||:|  :  |  | :: ||:| |||
Db          2058 GAGUCGUCCUAUUCUAAGAACGAGGAGAUAGAGUCUUUAGAGCAGUUUCAUAUGGCGACG 2117

Qy          2114 GTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTCTACACTGGCTCACTCAAAGTT 2173
                 |  ||:    : |::   |||||| |:|   :|| ::|: :|||| ||  |  : ||||::
Db          2118 GCAGAUUCGUUAAUUCGUAAGCAGAUGAGCUCGAUUGUGUACACGGGUCCGAUUAAAGUU 2177

Qy          2174 CAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCGTTGTCCGCCACTGTATCAAAT 2233
                 || ||||:||| |||: : : || ||  :|| ||| :|  : :| ||  | |: :| ||:
Db          2178 CAGCAAAUGAAAAACUUUAUCGAUAGCCUGGUAGCAUCACUAUCUGCUGCGGUGUCGAAU 2237

Qy          2234 CTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCTGATTCCAGGGAGAAAGTTGGT 2293
                 |:   ||||   |: || ||:  ||  |    :||   :||  || |  |  ||  ::||
Db          2238 CUCGUCAAGAUCCUCAAAGAUACAGCUGCUAUUGACCUUGAAACCCGUCAAAAGUUUGGA 2297

Qy          2294 GTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCTGCGGCCAAAGGTCATTCATGG 2353
                 |: : |||:|:  | :  |  |||:|| :  :||||||  |||||||  |:||: ||:||
Db          2298 GUCUUGGAUGUUGCAUCUAGGAAGUGGUUAAUCAAACCAACGGCCAAGAGUCAUGCAUGG 2357

Qy          2354 GGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCACTTCTATCTTATGAAGGAGAT 2413
                 || |::|:        ||  | ||||      :   || |:: :    :|:|| |   |
Db          2358 GGUGUUGUUGAAACCCACGCGAGGAAGUAUCAUGUGGCGCUUUUGGAAUAUGAUGAGCAG 2417

Qy          2414 AGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTATCATCTGATACAATGGTATAT 2473
                  |  :||:|||       || :|||| || |: ||:|:    :|:||  |  : |: :|:
Db          2418 GGUGUGGUGACAUGCGAUGAUUGGAGAAGAGUAGCUGUUAGCUCUGAGUCUGUUGUUUAU 2477

Qy          2474 TCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATGAGAGACGGTGAACCCCACGAA 2533
                 :| || |: || || |:|  || :|:| | |    :  || |||| ||||| ||| |
Db          2478 UCCGACAUGGCGAAACUCAGAACUCUGCGCAGACUGCUUCGAAACGGAGAACCGCAUGUC 2537

Qy          2534 CCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGTTGTGGAAAGTACAAAGGAGAT 2593
                   :|  |||||| : |: |::|:||| || |: || || :|:|||||   ||||| |  :
Db          2538 AGUAGCGCAAAGGUUGUUCUUGUGGACGGAGUUCCGGGCUGUGGAAAAACCAAAGAAAUU 2597

Qy          2594 TTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTTCCTGGAAAACAAGCTGCTGCT 2653
                  ::   ||  :: |: ::||:|| ||: : |: :: |: ||:|| || ||||| || |
Db          2598 CUUUCCAGGGUUAAUUUUGAUGAAGAUCUAAUUUUAGUACCUGGGAAGCAAGCCGCGGAA 2657

Qy          2654 ATGATCAGAAGAAGGGCTAATTCATCTGGACTGATAAGAGCCACAATGGACAATGTGAGA 2713
                 |:||:||||||| | || ||::| :| ||  : |:    ||||| | |||||| |: | |
Db          2658 AUGAUCAGAAGACGUGCGAAUUCCUCAGGGAUUAUUGUGGCCACGAAGGACAACGUUAAA 2717

Qy          2714 ACGGTAGATTCACTTCTAATGCATCCAAAACCGCGATCACA---------CAAGAGGCTT 2764
                 || |: ||::|  :  : |:| |:          |  |||          ||||||| :
Db          2718 ACCGUUGAUUCUUUCAUGAUGAAUUUUGGGAAAAGCACACGCUGUCAGUUCAAGAGGUUA 2777

Qy          2765 TTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTTAACTTCCTGGTGCTTATCTCT 2824
                 :: |::||:||||||::||:| :||| || ||::|:|::|| :: |: |:|   |: :|
Db          2778 UUCAUUGAUGAAGGGUUGAUGUUGCAUACUGGUUGUGUUAAUUUUCUUGUGGCGAUGUCA 2837

Qy          2825 GGTTGCGACATCGCATACATTTACGGAGATACACAGCAGATTCCTTTCATTAACAGAGTT 2884
                    :|||| |: |||:|  :::||||||| ||||||||||::|| : ||: || ||||::
Db          2838 UUGUGCGAAAUUGCAUAUGUUUACGGAGACACACAGCAGAUUCCAUACAUCAAUAGAGUU 2897

Qy          2885 CAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAAGTGGATGAAGTTGAGATGAGG 2944
                       ::||||:| |||   ||::::|  ||  :| |||: || || |: ||||   |
Db          2898 UCAGGAUUCCCGUACCCCGCCCAUUUUGCCAAAUUGGAAGUUGACGAGGUGGAGACACGC 2957

Qy          2945 AGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTCCTACAATCGAAGTACGAAGGA 3004
                 || || || |:  | :| ||||  ||:|: |    ::  |:  |   ||  :| || ||
Db          2958 AGAACUACUCUCCGUUGUCCAGCCGAUGUCACACAUUAUCUGAACAGGAGAUAUGAGGGC 3017

Qy          3005 GCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCATCTGAGATGATAGGCGGTAAG 3064
                    |: |  | |||::|  | |:  ||   :| |: :|    ||||:| : |||||
Db          3018 UUUGUCAUGAGCACUUCUUCGGUUAAAAAGUCUGUUUCGCAGGAGAUGGUCGGCGGAGCC 3077

Qy          3065 GGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGGAAAATTGTAACTTTCACTCAGGCT 3124
                 |  |:  : ||     : :| |||||  :  | || || |:  : ||::: || ||  |
Db          3078 GCCGUGAUCAAUCCGAUCUCAAAACCCUUGCAUGGCAAGAUCCUGACUUUUACCCAAUCG 3137

Qy          3125 GATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTGAACACCGTTCATGAGATCCAA 3184
                 ||:|||   |   :       |  || :|:    |:|:  |||| |: ||:||  : |||
Db          3138 GAUAAAGAAGCUCUGCUUUCAAGAGGGUAUUCAGAUGUUCACACUGUGCAUGAAGUGCAA 3197

Qy          3185 GGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACGGCAACTCCACTGACTCTGATT 3244
                 || || || :     ||:|: :| |: |: || :: ||  | || ||| :  |  : |::
Db          3198 GGCGAGACAUACUCUGAUGUUUCACUAGUUAGGUUAACCCCUACACCAGUCUCCAUCAUU 3257

Qy          3245 TCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGACACACAAAGAGCTTCAAATAT 3304
                  |         ||| ||:|:: : |:|||  :| | || |||||          :||| :|
Db          3258 GCAGGAGACAGCCCACAUGUUUUGGUCGCAUUGUCAAGGCACACCUGUUCGCUCAAGUAC 3317

Qy          3305 TACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGTGATTTGTCTTCTTTAAGCTCC 3364
                 :|||| |: |:  : ||:||:::||:    |: |::|| ||: :        : |||:|
Db          3318 UACACUGUUGUUAUGGAUCCUUUAGUUAGUAUCAUUAGAGAUCUAGAGAAACUUAGCUCG 3377

Qy          3365 TTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGATAGCAATTACAGATGGATGCA 3424
                 : | : ::||| |:|:|:|: ||: || |||||| |    |:|||||::|||||: ||  |
Db          3378 UACUUGUUAGAUAUGUAUAAGGUCGAUGCAGGAACACAAUAGCAAUUACAGAUUGACUCG 3437

Qy          3425 GTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAATCAGGAGACTTTCCAGATCTA 3484
                 |:|::||||||:   ||:|: :::|: ||| | || ||  | || ||  :: | ||: :
Db          3438 GUGUUCAAAGGUUCCAAUCUUUUUGUUGCAGCGCCAAAGACUGGUGAUAUUUCUGAUAUG 3497

Qy          3485 CAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACTATACTTAACAAGTATGATGCT 3544
                 |||:: :| :| ||:   :| |:||| || || || || |:  : || ||  : :||:||:
Db          3498 CAGUUUUACUAUGAUAAGUGUCUCCCAGGCAACAGCACCAUGAUGAAUAAUUUUGAUGCU 3557

Qy          3545 GTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAGGATTGTGTTCTTGATTTTTCC 3604
                 |::||||:||||::   :|| | :    : ||:|: || ||::|  :  : ||: : :|
Db          3558 GUUACCAUGAGGUUGACUGACAUUUCAUUGAAUGUCAAAGAUUGCAUAUUGGAUAUGUCU 3617

Qy          3605 AAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTAGAGCCAGTTTTGCGTACCGCG 3664
                 ||   : ::|    ||| |||||    |    |   |:|   ||  :  : || || |||
Db          3618 AAGUCUGUUCGUGCGCCUAAGGAUCAAAUCAAACCACUAAUACCUAUGGUACGAACGGCG 3677

Qy          3665 GCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTGGTTGCAATGATTAAAAGAAAT 3724
                 || |||  |||| |     | ||||:| : |||||: : |: || |:||::||||||||
Db          3678 GCAGAAAUGCCACGCCAGACUGGACUAUUGGAAAAUUUAGUGGCGAUGAUUAAAAGAAAC 3737

Qy          3725 TTCAACGCACCAGACCTGACGGGGACGATTGACATTGAGAGCACCGCATCTGTTGTAGTA 3784
```

```
              :: |||||||| ||  :| | || |  |::|| |::|| |  || |||:|: : |: |:|
Db       3738 UUUAACGCACCCGAGUUGUCUGGCAUCAUUGAUAUUGAAAAUACUGCAUCUUUGGUUGUA 3797

Qy       3785 GATAAGTTTTTTGATAGCTATTTTATTAAAAAAGAAAAATACACAAAAAATATTGCTGGA 3844
              ||:|||::::::||:|| :|:::  ::||| || ||| | |  |||| || | :| :
Db       3798 GAUAAGUUUUUUGAUAGUUAUUUGCUUAAAGAAAAAAGAAAACCAAAUAAAAAUGUUUCU 3857

Qy       3845 GTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAACAGGAAAGAAGTACTATTGGAC 3904
               :| : |  |  || :|  : |  |||:||:: |||||   | ||  | |:|  | : | |
Db       3858 UUGUUCAGUAGAGAGUCUCUCAAUAGAUGGUUAGAAAAGCAGGAACAGGUAACAAUAGGC 3917

Qy       3905 GACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATCGATCAGTACAAGCACATGATC 3964
               |  : ||  | :   |::::   ||: :||| ||   : ||:|||:|||  ||||:||:
Db       3918 CAGCUCGCAGAUUUUGAUUUUGUGGAUUUGCCAGCAGUUGAUCAGUACAGACACAUGAUU 3977

Qy       3965 AAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAGAATGAATACCCTGCTCTGCAA 4024
              || || ||||| ||||| ||  ::||||   ::|||: || |  || :|||| ||: :|||
Db       3978 AAAGCACAACCCAAACAAAAGUUGGACACUUCAAUCCAAACGGAGUACCCGGCUUUGCAG 4037

Qy       4025 ACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTGGCCGGTTTCT---CAGAGCTT 4081
              || |::|: :||||::| ||  |||:||| |  |: :: | |   :: :     ||||::
Db       4038 ACGAUUGUGUACCAUUCAAAAAAGAUCAAUGCAAUAUUCGGCCCGUUGUUUAGUGAGCUU 4097

Qy       4082 ACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTTCTTTTCTTTACTAGGAAAACT 4141
              || |||    : |: ||    ::||::| |  |  ::: : :: :: || || || ||
Db       4098 ACUAGGCAAUUACUGGACAGUGUUGAUUCGAGCAGAUUUUUGUUUUUCACAAGAAAGACA 4157

Qy       4142 CCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCGCACGTTCCTATGGATGTGTTA 4201
              ||||  ||||:: | || :: ::|   ||:|:||||   || |: || |:|||:|: ::
Db       4158 CCAGCGCAGAUUGAGGAUUUCUUCGGAGAUCUCGACAGUCAUGUGCCGAUGGAUGUCUUG 4217

Qy       4202 GAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAGTTTCATTGTGCTGTAGAGTAT 4261
              || |:|||:|: :| || :| || || :| ||||| ||  :: || :|:|| |:||| :|
Db       4218 GAGCUGGAUAUAUCAAAAUACGACAAAUCUCAGAAUGAAUUCCACUGUGCAGUAGAAUAC 4277

Qy       4262 GAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCCGAAGTGTGGAAACAAGGGCAC 4321
              || |: :||  ||||::|||: :   | || :: ::||  ||||: :|||||||||||||
Db       4278 GAGAUCUGGCGAAGAUUGGGUUUUGAAGACUUCUUGGGAGAAGUUUGGAAACAAGGGCAU 4337

Qy       4322 AGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAGACATGTCTGTGGTATCAAAGG 4381
              || || || ||  : |||||::| |  || || |: || || :|  : :||:|:|||||
Db       4338 AGAAAGACCACCCUCAAGGAUUAUACCGCAGGUAUAAAAACUUGCAUCUGGUAUCAAAGA 4397

Qy       4382 AAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTTATAATAGCAGCTTGCTTGGGT 4441
              || ||||| || |: || || ::||: || || ||:|: |: |: || || :| ::||
Db       4398 AAGAGCGGGGACGUCACGACGUUCAUUGGAAACACUGUGAUCAUUGCUGCAUGUUUGGCC 4457

Qy       4442 TCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTTTGTGGAGACGATTCCGTTTTG 4501
              :| |:| : ||||:||| ||  : |: ||||| || ::::| || |||||:    :  :|
Db       4458 UCGAUGCUUCCGAUGGAGAAAAUAAUCAAAGGAGCCUUUUGCGGUGACGAUAGUCUGCUG 4517

Qy       4502 TATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCATGTGCTAATCTCATGTGGAAT 4561
              :| :::||||||||::  || :: || ||  : ||    :  || ||:|: |:|:||||:
Db       4518 UACUUUCCAAAGGGUUGUGAGUUUCCGGAUGUGCAACACUCCGCGAAUCUUAUGUGGAAU 4577

Qy       4562 TTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTTTGTGGTAGATACATCATACAC 4621
              :::|| || ||||:|: :| |||   |:| || :||::::| || |||:|   : |:|||
Db       4578 UUUGAAGCAAAACUGUUUAAAAAACAGUAUGGAUACUUUUGCGGAAGAUAUGUAAUACAU 4637

Qy       4622 CATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAGTTGATCTCCAAACTTGGGGCA 4681
              || || |  |||   |: |:|:|::| ||:||  : |||::||:|:| ||||::|| ||
Db       4638 CACGACAGAGGAUGCAUUGUGUAUUACGAUCCCCUAAAGUUGAUCUCGAAACUUGGUGCU 4697

Qy       4682 AAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGGGTGTCTTTGTGCGATGTTGCT 4741
              ||||| |:||||||::  || |||:: || |||:: ||   |:|: : :| ||:|::||:
Db       4698 AAACACAUCAAGGAUUGGGAACACUUGGAGGAGUUCAGAAGGUCUCUUUGUGAUGUUGCU 4757

Qy       4742 TGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTGAACGCAGCTATCAAGGAGGTT 4801
                ::|| :    || :|    :     :   | ||| :| |||  ||: :   |||||::
Db       4758 GUUUCGUUGAACAAUUGUGCGUA---UUACACACAGUUGGACGACGCUGUAUGGGAGGUU 4814

Qy       4802 CATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGTGTTAACAAATTTTTGTGTGAT 4861
              ||:|| |||||    :    ||::||:::| :: :||  |: :     || : :::|: :||:
Db       4815 CAUAAGACCGCCCCUCCAGGUUCGUUUGUUUAUAAAAGUCUGGUGAAGUAUUUGUCUGAU 4874

Qy       4862 AAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAGTCTCAGAGATACTGTCAAAAT 4921
              ||| :: : :::|||| :::|::: :| |:|||: :    : : | ||   |  |: || |:
Db       4875 AAAGUUCUUUUUAGAAGUUUGUUUAUAGAUGGCUCUAGUUGUUAAAGGAAAAGUGAAUAU 4934

Qy       4922 TAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACTTCCGGCATTCATGACTAAGGT 4981
               |  |||:: |: || |: :| |||  |||  |||:  : ||| |   :  : ||     |:
Db       4935 CAAUGAGUUUAUCGACCUGUCAAAAAUGGAGAAGAUCUUACCGUCGAUGUUUACCCCUGU 4994

Qy       4982 CAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGCTGTTAAGAATGATAGTCTTTC 5041
               |||||:|::|      :| |  |: || || |: |:||  :  : ||||:||     : :|
Db       4995 AAAGAGUGUUAUGUGUUCCAAAGUUGAUAAAAUAAUGGUUCAUGAGAAUGAGUCAUUGUC 5054

Qy       5042 TGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAAAGGGTATGTGTGCTTAGCTGA 5101
               || |:   |   : |::||||| |::|||  :   :: | |   || :| |: :| ::||| |
Db       5055 AGAGGUGAACCUUCUUAAAGGAGUUAAGCUUAUUGAUAGUGGAUACGUCUGUUUAGCCGG 5114

Qy       5102 TTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTGCCGTGGTGGTGTCAGTGTTTG 5161
              :::||: |:  | || |||:||||   : || || || :|| | || ||:|: || |: :|
Db       5115 UUUGGUCGUCACGGGCGAGUGGAACUUGCCUGACAAUUGCAGAGGAGGUGUGAGCGUGUG 5174

Qy       5162 TATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAACGCTGGGTGCGTATCACGCCCC 5221
              : : |: || || || |:| ||||      | || || || |: ||  | :|  || | |
Db       5175 UCUGGUGGACAAAAGGAUGGAAAGAGCCGACGAGGCCACUCUCGGAUCUUACUACACAGC 5234

Qy       5222 TGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAATTATTCAATAACATCCGAGGA 5281
               ||:   || || |  :::   :: |||  :  : || ||::|: | |:||| || ||||
Db       5235 AGCUGCAAAGAAAAGAUUUCAGUUCAAGGUCGUUCCCAAUUAUGCUAUAACCACCCAGGA 5294

Qy       5282 TGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAAAGGAGTGGCTATGGAAGAAGG 5341
               ||   |||  ||   :||||||: ::||: ||:|: | |   |:|   |:| || ||
Db       5295 CGCGAUGAAAAACGUCUGGCAAGUUUUAGUUAAUAUUAGAAAUGUGAAGAUGUCAGCGGG 5354

Qy       5342 ATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGTAGTACATAAAAATAATGTAAG 5401
               : |:|:||  : :|: :||||:: |: :|  : :|: : |:   |:| |||:||: :||
Db       5355 UUUCUGUCCGCUUUCUCUGGAGUUUGUGUCGGUGUGUAUUGUUUAUAGAAAUAAUAUAAA 5414

Qy       5402 AAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGGCTCGCCAATTGAACTCACTGA 5461
              |  |||:::||| ||    |::   |  |:|| ||||||    ||| |: ||||: || ||
Db       5415 AUUAGGUUUGAGAGAGAAGAUUACAAACGUGAGAGACGGAGGGCCCAUGGAACUUACAGA 5474

Qy       5462 AAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGCTGTGAAACTCGAAAAGGTTCC 5521
              | | |: |::|| |||::| :||| || |: || |:| |   : |  |: | |||| ::|
Db       5475 AGAAGUCGUUGAUGAGUUCAUGGAAGAUGUCCCUAUGUCGAUCAGGCUUGCAAAGUUUCG 5534

Qy       5522 GG------------AAAACAAAAAAGAAATGGTAGGTAATAATGTTAATAAT-------- 5561
                            |||| |   | |       ||| || ||:  :| :||:
Db       5535 AUCUCGAACCGGAAAAAAGAGUGAUGUCCGCAAAGGGAAAAAUAGUAGUAAUGAUCGGUC 5594

Qy       5562 -------AAGAAAATAAATAACAGTGGTAAGAAGGGTTTTAAAATTGAGGAAATTGAGGA 5614
                     || || |   |:| | :| :||| |   :      ||:          |  || |
Db       5595 AGUGCCGAACAAGAACUAUAGAAAUGUUAAGGAUUUUGGAGGAAUGAGUUUUAAAAAGAA 5654

Qy       5615 TAATGTAAGTGATGACGAGT---------CTATCGCGTCATCGAGTACGTTTTAATCAAT 5665
              :||: :||  ||:|| || :         |: :|||   |:||  : ||::::|    ||:
Db       5655 UAAUUUAAUCGAUGAUGAUUCGGAGGCUACUGUCGCCGAAUCGGAUUCGUUUUA---AAU 5711

Qy       5666 ATGCCTTATACAATCAACTCTCCGAGCCAATTTGTTTACTTATCTTCCGCTTACGCAGAT 5725
              |:| |::| |  |:||   |:||     || :: |: : |:: :| :| || :   || ||
Db       5712 AUGUCUUACAGUAUCACUACUCCAUCUCAGUUCGUGUUCUUGUCAUCAGCGUGGGCCGAC 5771

Qy       5726 CCTGTGCAGCTGATCAATCTGTGTACAAATGCATTGGGTAACCAGTTTCAAACGCAACAA 5785
              ||  :  || : |: ||: : :|:|| ||:|| :: || || |||:::||||| ||||||.
Db       5772 CCAAUAGAGUUAAUUAAUUUAUGUACUAAUGCCUUAGGAAAUCAGUUUCAAACACAACAA 5831

Qy       5786 GCTAGGACAACAGTCCAACAGCAATTTGCGGATGCCTGGAAACCTGTGCCTAGTATGACA 5845
              ||: | ||    |: |||    |||::     || |  :|||||||:   ||      : ||
Db       5832 GCUCGAACUGUCGUUCAAAGACAAUUCAGUGAGGUGUGGAAACCUUCACCACAAGUAACU 5891

Qy       5846 GTGAGATTTCCTGCATCGGATTTCTATGTGTATAGATATAATTCGACGCTTGATCCGTTG 5905
              |: || :: ||:|      || ::  | |:|:| || :| ||: ||      : || ||| :
Db       5892 GUUAGGUUCCCUGACAGUGACUUUAAGGUGUACAGGUACAAUGCGGUAUUAGACCCGCUA 5951
```

```
Qy   5906 ATCACGGCGTTATTAAATAGCTTTGATACTAGAAATAGAATAATAGAGGTTGATAATCAA 5965
           :||| ||  : ::|  :   :: || ||:|||||:||||:||:||| |::|| ||:||
Db   5952 GUCACAGCACUGUUAGGUGCAUUCGACACUAGAAAUAGAAUAAUAGAAGUUGAAAAUCAG 6011

Qy   5966 CCCGCACCGAATACTACTGAAATCGTTAACGCGACTCAGAGGGTAGACGATGCTACTGTA 6025
           |    || |  ||: | ||||   :  | || ||:|  || |:|||||| || || |:
Db   6012 GCGAACCCCACGACUGCCGAAACGUUAGAUGCUACUCGUAGAGUAGACGACGCAACGGUG 6071

Qy   6026 GCTATAAGGGCTTCAATCAATAATTTGGCTAATGAACTGGTTCGTGGAACTGGCATGTTC 6085
          || |:||||    | |: ||:||:::       ||| :| :  | ||||| ||    :
Db   6072 GCCAUAAGGAGCGCGAUAAAUAAUUUAAUAGUAGAAUUGAUCAGAGGAACCGGAUCUUAU 6131

Qy   6086 AATCAAGCAGGCTTTGAGACTGCTAGTGGACTTGTCTGGACCACAACTCCGGCTACTTAG 6145
          ||:|        :: ||||   |:  :||  : |: :||||| |   :|| || || :||
Db   6132 AAUCGGAGCUCUUUCGAGAGCUCUUCUGGUUUGGUUUGGACCUCUGGUCCUGCAACCUAG 6191

Qy   6146 CTATT 6150
          | |::
Db   6192 CAAUU 6196

RESULT 7
US-09-962-527-4
; Sequence 4, Application US/09962527
; Publication No. US20030049813A1
;   GENERAL INFORMATION:
;         APPLICANT: GARGER, STEPHEN
;                    HOLTZ, R. BARRY
;                    McCULLOCH, MICHAEL
;                    TURPEN, THOMAS
;         TITLE OF INVENTION: A PROCESS FOR ISOLATING AND
;                             PURIFYING VIRUSES SOLUBLE PROTEINS AND PEPTIDES
;                             FROM PLANT SOURCES
;         NUMBER OF SEQUENCES: 5
;         CORRESPONDENCE ADDRESS:
;              ADDRESSEE: Howrey & Simon
;              STREET: 1299 Pennsylvania Avenue N.W.
;              CITY: Washington
;              STATE: DC
;              COUNTRY: USA
;              ZIP: 20004
;         COMPUTER READABLE FORM:
;              MEDIUM TYPE: Diskette
;              COMPUTER: IBM Compatible
;              OPERATING SYSTEM: DOS
;              SOFTWARE: FastSEQ for Windows Version 2.0
;         CURRENT APPLICATION DATA:
;              APPLICATION NUMBER: US/09/962,527
;              FILING DATE: 24-Sep-2001
;              CLASSIFICATION: <Unknown>
;         PRIOR APPLICATION DATA:
;              APPLICATION NUMBER: 09/037,751
;              FILING DATE: 10-march-1998
;         ATTORNEY/AGENT INFORMATION:
;              NAME: Halluin, Albert P
;              REGISTRATION NUMBER: 25,277
;              REFERENCE/DOCKET NUMBER: 00801.0140.999
;         TELECOMMUNICATION INFORMATION:
;              TELEPHONE: 650-463-8109
;              TELEFAX: 650-463-8400
;              TELEX: <Unknown>
;   INFORMATION FOR SEQ ID NO: 4:
;         SEQUENCE CHARACTERISTICS:
;              LENGTH: 6475 base pairs
;              TYPE: nucleic acid
;              STRANDEDNESS: single
;              TOPOLOGY: unknown
;         MOLECULE TYPE: Genomic RNA
;         SEQUENCE DESCRIPTION: SEQ ID NO: 4:
US-09-962-527-4

  Query Match           38.6%;  Score 2452.2;  DB 10;  Length 6475;
  Best Local Similarity   44.8%;  Pred. No. 0;
  Matches 2770;  Conservative 1147;  Mismatches 2208;  Indels   60;  Gaps    8;

Qy     20 ACAACAACAATTAAAACAAAAACAACATATTACAAACAACAAACAACAACAATGGCACAC 79
          || |  |  |  |||  | ||||||||:   |   || |   ||||  ||||:|||| ||
Db     18 ACCAACAACAACAAACAACAAACAACAUUACAAUUACUAUUUACAAUUACAAUGGCAUAC 77

Qy     80 ATACAATCTATAATTAGCAACGCCCTTCTTGAAAGCGTGAGTGGTAAAAACACTCTCGTT 139
          | |||  |    |  |     ||  : |: || |  |:  | || || ||| |  : |:
Db     78 ACACAGACAGCUACCACAUCAGCUUUGCUGGACACUGUCCGAGGAAACAACUCCUUGGUC 137

Qy    140 AATGACCTTGCAAGAAGGCGCATGTACGATACGGCCGTGGAAGAATTTAACGCCCGCGAC 199
          ||:|| |: ||||   | ||  : :|||| || || |: ||||| :::||||| || |||
Db    138 AAUGAUCUAGCAAAGCGUCGUCUUUACGACACAGCGGUUGAAGAGUUUAACGCUCGUGAC 197

Qy    200 CGTAGACCAAAGGTCAACTTTTCCAAAACTATTAGCGAAGAGCAAACGCTTCTAGTCTCC 259
          || || || ||||: |||::::| |||   |: ||||| ||||| ||||:: : |   ||
Db    198 CGCAGGCCCAAGGUGAACUUUUCAAAAGUAAUAAGCGAGGAGCAGACGCUUAUUGCUACC 257

Qy    260 AACGCGTACCCGGAGTTCCAGATTACCTTTTATAATACTCAAAATGCCGTACACAGTTTG 319
             |||:| || || ::||| |::|| ::::|:|| || |||||:||||: ||     :
Db    258 CGGGCGUAUCCAGAAUUCCAAAUUACAUUUUAUAACACGCAAAAUGCCGUGCAUUCGCUU 317

Qy    320 GCTGGAGGTTTGAGAGCATTAGAATTGGAATATCTGATGCTACAAGTTCCCTATGGATCG 379
          || || || ::| || | ::|||| :||||:|:|:||:| : ||| ::|||:| |||:|
Db    318 GCAGGUGGAUUGCGAUCUUUAGAACUGGAAUAUCUGAUGAUGCAAAUUCCCUACGGAUCA 377

Qy    380 CCGACATATGATATAGGTGGGAACTTTGCAGCACATTTGTTCAAAGGCAGGGATTACGTG 439
            ||| :|:|| |:||| ||||| :::||| | ||: :|::||| ||  | |  :| |:
Db    378 UUGACUUAUGACAUAGGCGGGAAUUUUGCAUCGCAUCUGUUCAAGGGACGAGCAUAUGUA 437

Qy    440 CATTGCTGTATGCCCAATCTGGACATACGAGATATAATGAGGCACGAAGGACAAAAGGAC 499
          || :||:| |:|||||| |:|||| : ||||| |: |:| |||||||||| || || |||
Db    438 CACUGCUGCAUGCCCAACCUGGACGUUCGAGACAUCAUGCGGCACGAAGGCCAGAAAGAC 497

Qy    500 TCAATTGAGATGTATTTGTCCAGATTGTCTCGTTCTAACAAGGTAATTCCTGAGTTTCAA 559
             |::||  : :|  : :| ||  :     |       ||   | : ||  | :: |||
Db    498 AGUAUUGAACUAUACCUUUCUAGGCUAGAGAGAGGGGGGAAAACAGUCCCCAACUUCCAA 557

Qy    560 AGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAAGTCTGCTGCTCTAAAACTTTT 619
          | ||| || ::: |||| :| ||||||  :||  | || |    |:|    || ||:::
Db    558 AAGGAAGCAUUUGACAGAUACGCAGAAAUUCCUGAAGACGCUGUCUGUCACAAUACUUUC 617

Qy    620 CAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGAAGATACGCTGTTGCTCTGCAC 679
          |||      |||   || |||    || |    || |||   :| ||  ::|| |: |||
Db    618 CAGACAAUGCGACAUCAGCCGAUGCAGCAAUCAGGCAGAGUGUAUGCCAUUGCGCUACAC 677

Qy    680 AGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCGTTAATATCTAAGAATATACAT 739
          ||  : :|:|| |: || |   |:|||:: || || ||  :  :    || ||: : ||:
Db    678 AGCAUAUAUGACAUACCAGCCGAUGAGUUCGGGGCGGCACUCUUGAGGAAAAAUGUCCAU 737

Qy    740 GTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTACTAGACCAGACGGAGGTTACG 799
             :| :|:|| ||:: |   ::  | ||     :  : |: ||  |  |  | |: |
Db    738 ACGUGCUAUGCCGCUUUCCACUUCUCUGAGAACCUGCUUCUUGAAGAUUCAUACGUCAAU 797

Qy    800 CTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGATGATGTTTCTTTTTTCTTTGCT 859
           :  | ||||:   |||   :::     | || || ||  |  :  | ::::  :::||
Db    798 UUGGACGAAAUCAACGCGUGUUUUUCGCGCGAUGGAGACAAGUUGACCUUUUCUUUUGCA 857

Qy    860 GATGAAAGTACTTTAAATTATAGTCATAAATACAAAAATATCTTGCATTATGTAGTTAAA 919
             || ||:||: : ||::|: |:||:|  :|    ||:|:  :  | :|:|:    |||
Db    858 UCAGAGAGUACUCUUAAUUAUUGUCAUAGUUAUUCUAAUAUUCUUAAGUAUGUGUGCAAA 917

Qy    920 TCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAGGAATTTTTAGTCACTAGGGTT 979
           |::||:: || || :|:| :|||   |:::|| : ||||| :::::||:||| || |::
Db    918 ACUUACUUCCCGGCCUCUAAUAGAGAGGUUUACAUGAAGGAGUUUUUAGUCACCAGAGUU 977

Qy    980 AATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTATATTCTGTACAAGAGTGTTAGA 1039
          ||:|| :||::::|:|| ::: | | | :|||:|| : : :: :|:||||  |:|:
Db    978 AAUACCUGGUUUUGUAAGUUUUCUAGAAUAGAUACUUUUCUUUUGUACAAAGGUGUGGCC 1037

Qy   1040 CAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATGGAAGACGCCTTTGCTTACAAG 1099
          ||   | |    ||:||:|| |||:: :|:   || |:||||||||| :    ::||||
```

```
Db        1038 CAUAAAAGUGUAGAUAGUGAGCAGUUUUAUACUGCAAUGGAAGACGCAUGGCAUUACAAA 1097

Qy        1100 AAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTTAGAGACACGGCTTCGGTTAAC 1159
               || ||  : || |:|: ||||| || |||    :| ::   ||  |  | :| |: ||
Db        1098 AAGACUCUUGCAAUGUGCAACAGCGAGAGAAUCCUCCUUGAGGAUUCAUCAUCAGUCAAU 1157

Qy        1160 TTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCGCTGTTTGAGGGTTCTATTACC 1219
               :  :||:: || || |:|| ||| |:||: |: |:|||  : :: ||   ::|: :
Db        1158 UACUGGUUUCCCAAAAUGAGGGAUAUGGUCAUCGUACCAUUAUUCGACAUUUCUUUGGAG 1217

Qy        1220 AGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGTGACTTCGTTTACACAGTGCTT 1279
               |  |  |||| |||  | |  || |:| : |:       || ::||: :  ||||:||::
Db        1218 ACUAGUAAGAGGACGCGCAAGGAAGUCUUAGUGUCCAAGGAUUUCGUGUUUACAGUGCUU 1277

Qy        1280 AATCATATCAGAACATATCAAGCCAAAGCGTTAACTTACCAGAACGTATTATCTTTCGTG 1339
               || || |:  |||||:| || || |||||  : || :||   || |: :: :| :: |:
Db        1278 AACCACAUUCGAACAUACCAGGCGAAAGCUCUUACAUACGCAAAUGUUUUGUCCUUUGUC 1337

Qy        1340 GAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACTGCTAGGTCTGAATGGGATGTA 1399
               || :| |:  ||:|  | |: |: |: || ||:|: || || |||:| |||:||||:|:
Db        1338 GAAUCGAUUCGAUCGAGGGUAAUCAUUAACGGUGUGACAGCGAGGUCCGAAUGGGAUGUG 1397

Qy        1400 GATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTCTTGCAGACTAAGCTGGCTGCG 1459
               || ||| |  :  : ||| ||::|:| |:||| :: : | :||| ||:||||: || |
Db        1398 GACAAAUCUUUGUUACAAUCCUUGUCCAUGACGUUUUACCUGCAUACUAAGCUUGCCGUU 1457

Qy        1460 CTTCAAGACGATATAGTAATGGGAAAGTTTCGGTGCTTGGATAAGACCACTTCTGAACTT 1519
               |:  | || ||  :| : |:  | |||::: |   |      || ||    :   | | :
Db        1458 CUAAAGGAUGACUUACUGAUUAGCAAGUUUAGUCUCGGUUCGAAAACGGUGUGCCAGCAU 1517

Qy        1520 ATTTGGGATGAGGTGGGCAAATTTTTTGGAAACGTTTTCCCCACTATCAAAGAGAGATTG 1579
                : ||||:||| :          :::|| ||||  :: ||| |  : ||||||||  :
Db        1518 GUGUGGGAUGAGAUUUCGCUGGCGUUUGGGAACGCAUUUCCCUCCGUGAAAGAGAGGCUC 1577

Qy        1580 GTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTGAAGATCAAGATCCCAGATCTG 1639
                :|| ||||||| :: :    |:    |   | ||  :  |||:|| | : || ||:|:
Db        1578 UUGAACAGGAAACUUAUCAGAGUGGCAGGCGACGCAUUAGAGAUCAGGGUGCCUGAUCUA 1637

Qy        1640 TATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACCAAGTCTGAGGAGTTACCGCAT 1699
               :|:|: || :   | ||||| :: |:  |:|  :|||     :|:| |||  : ||
Db        1638 UAUGUGACCUUCCACGACAGAUUAGUGACUGAGUACAAGGCCUCUGUGGACAUGCCUGCG 1697

Qy        1700 CTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATGTACGACGCGTTATCAGAATTA 1759
               |: || |: | |||| |  : |||||| | ||    |:|:|| | ||  : :|||| ::|
Db        1698 CUUGACAUUAGGAAGAAGAUGGAAGAAACGGAAGUGAUGUACAAUGCACUUUCAGAGUUA 1757

Qy        1760 TCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAGTTCAAAGACATGTGCAAGGCT 1819
               :|  :  : | ||   |:|| || ::|||: : |     ::     | |:|:|| |  |:
Db        1758 UCGGUGUUAAGGGAGUCUGACAAAUUCGAUGUUGAUGUUUUUCCCAGAUGUGCCAAUCU 1817

Qy        1820 TTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTTGCAGTGGCCGAGAATAGAAGC 1879
               :: || |::   ||      ||||||    |: |: |: || |:       ||:   |||
Db        1818 UUGGAAGUUGACCCAAUGACGGCAGCGAAGGUUAUAGUCGCGGUCAUGAGCAAUGAGAGC 1877

Qy        1880 GGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAATGTGGCTAAGGCTCT------T 1933
               ||: : ||:|: || :::||    || || |||| |||:|: ||    ||: :      :
Db        1878 GGUCUGACUCUCACAUUUGAACGACCUACUGAGGCGAAUGUUGCGCUAGCUUUACAGGAU 1937

Qy        1934 AAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCGACATCCGAAGAGGTGAACGTA 1993
                ||   | ||| :| || |  |   :     ::    | | |   |  || |
Db        1938 CAAGAGAAGGCUUCAGAAGGUGCUUUGGUAGUUACCUCAAGAGAAGUUGAAGAACCGUCC 1997

Qy        1994 AATAAATTTTCTATTGCTGAGAAAGGGAGATTGCCTGTGTGTGCAGAAAGTCATGGTTTG 2053
               |  ||   ::| |: ||      || |  |      |   |:   |   |  |:  :  |
Db        1998 AUGAAGGGUUCGAUGGCCAGAGGAGAGUUACAAUUAGCUGGUCUUGCUGGAGAUCAUCCG 2057

Qy        2054 ACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTCAACGATTTCCATAAGGCTTGC 2113
                 |    |  | :   || || ||||| : |||:|  :  |  | :: ||:| |||
Db        2058 GAGUCGUCCUAUUCUAAGAACGAGGAGAUAGAGUCUUUAGAGCAGUUUCAUAUGGCAACG 2117

Qy        2114 GTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTCTACACTGGCTCACTCAAAGTT 2173
               |  ||:    : |::   ||||| |:|   :|| ::|: :|||| ||  |  : ||||::
Db        2118 GCAGAUUCGUUAAUUCGUAAGCAGAUGAGCUCGAUUGUGUACACGGGUCCGAUUAAAGUU 2177

Qy        2174 CAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCGTTGTCCGCCACTGTATCAAAT 2233
               || ||||:||| |||: : : || ||  :|| ||| :|  : :| ||  | |: :| ||:
Db        2178 CAGCAAAUGAAAAACUUUAUCGAUAGCCUGGUAGCAUCACUAUCUGCUGCGGUGUCGAAU 2237

Qy        2234 CTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCTGATTCCAGGGAGAAAGTTGGT 2293
               |:   ||||   |: || ||:  ||  |    :||   :||  || |  | ||  ::||
Db        2238 CUCGUCAAGAUCCUCAAAGAUACAGCUGCUAUUGACCUUGAAACCCGUCAAAAGUUUGGA 2297

Qy        2294 GTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCTGCGGCCAAAGGTCATTCATGG 2353
               |: : |||:|:  | :  |  |||:|| :  :||||||  |||||||  |:||: ||:||
Db        2298 GUCUUGGAUGUUGCAUCUAGGAAGUGGUUAAUCAAACCAACGGCCAAGAGUCAUGCAUGG 2357

Qy        2354 GGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCACTTCTATCTTATGAAGGAGAT 2413
               || |::|:        ||  | ||||      :   || |:: :    :|:|| |   |
Db        2358 GGUGUUGUUGAAACCCACGCGAGGAAGUAUCAUGUGGCGCUUUUGGAAUAUGAUGAGCAG 2417

Qy        2414 AGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTATCATCTGATACAATGGTATAT 2473
                |  :||:|||       || :|||| || |: ||:|:    :|:||  |  : |: :|:
Db        2418 GGUGUGGUGACAUGCGAUGAUUGGAGAAGAGUAGCUGUCAGCUCUGAGUCUGUUGUUUAU 2477

Qy        2474 TCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATGAGAGACGGTGAACCCCACGAA 2533
               :| || |: || || |:|  || :|:| | | |    :  || |||| ||||| || |
Db        2478 UCCGACAUGGCGAAACUCAGAACUCUGCGCAGACUGCUUCGAAACGGAGAACCGCAUGUC 2537

Qy        2534 CCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGTTGTGGAAAGTACAAAGGAGAT 2593
                 :|  |||||| : |: |::|:||| || |: || || :|:|| ||   ||||| |  :
Db        2538 AGUAGCGCAAAGGUUGUUCUUGUGGACGGAGUUCCGGGCUGUGGGAAAACCAAAGAAAUU 2597

Qy        2594 TTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTTCCTGGAAAACAAGCTGCTGCT 2653
                ::   ||  :: |: ::||:|| ||: : |: :: |: ||:|| || ||||| || |
Db        2598 CUUUCCAGGGUUAAUUUUGAUGAAGAUCUAAUUUUAGUACCUGGGAAGCAAGCCGCGGAA 2657

Qy        2654 ATGATCAGAAGAAGGCTAATTCATCTGGACTGATAAGAGCCACAATGGACAATGTGAGA 2713
               |:||:||||||| | || ||::| :| ||  : |:    ||||| | |||||| |: | |
Db        2658 AUGAUCAGAAGACGUGCGAAUUCCUCAGGGAUUAUUGUGGCCACGAAGGACAACGUUAAA 2717

Qy        2714 ACGGTAGATTCACTTCTAATGCATCCAAAACCGCGATCACA---------CAAGAGGCTT 2764
               || |: ||::|  :  : |:| |:          |  |||          ||||||| :
Db        2718 ACCGUUGAUUCUUUCAUGAUGAAUUUUGGGAAAAGCACACGCUGUCAGUUCAAGAGGUUA 2777

Qy        2765 TTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTTAACTTCCTGGTGCTTATCTCT 2824
               :: |::||:||||||::||:| :||| || ||::|:|::|| :: |: |:|   |: :|
Db        2778 UUCAUUGAUGAAGGGUUGAUGUUGCAUACUGGUUGUGUUAAUUUUCUUGUGGCGAUGUCA 2837

Qy        2825 GGTTGCGACATCGCATACATTTACGGAGATACACAGCAGATTCCTTTCATTAACAGAGTT 2884
                  :|||| |: ||:|   :::||||||| ||||||||||::|| : ||: || ||||::
Db        2838 UUGUGCGAAAUUGCAUAUGUUUACGGAGACACACAGCAGAUUCCAUACAUCAAUAGAGUU 2897

Qy        2885 CAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAAGTGGATGAAGTTGAGATGAGG 2944
                     ::||||:| |||   ||::::|  ||  :| |||: || || |: ||||   |
Db        2898 UCAGGAUUCCCGUACCCCGCCCAUUUUGCCAAAUUGGAAGUUGACGAGGUGGAGACACGC 2957

Qy        2945 AGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTCCTACAATCGAAGTACGAAGGA 3004
               || || || |:  | :| ||||  ||:|: |    ::  |:  |   ||  :| || ||
Db        2958 AGAACUACUCUCCGUUGUCCAGCCGAUGUCACACAUUAUCUGAACAGGAGAUAUGAGGGC 3017

Qy        3005 GCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCATCTGAGATGATAGGCGGTAAG 3064
                  |: |  | |||::|  | |:  ||   :| |: :|    ||||:| : |||||
Db        3018 UUUGUCAUGAGCACUUCUUCGGUUAAAAAGUCUGUUUCGCAGGAGAUGGUCGGCGGAGCC 3077

Qy        3065 GGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGGAAAATTGTAACTTTCACTCAGGCT 3124
               |  |:  : ||     : :| |||||  :  | || || |:  : ||::: || ||  |
Db        3078 GCCGUGAUCAAUCCGAUCUCAAAACCCUUGCAUGGCAAGAUCCUGACUUUUACCCAAUCG 3137

Qy        3125 GATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTGAACACCGTTCATGAGATCCAA 3184
               ||:|||   |   :       |  || :|:    |:|:  |||| |: ||:||  : |||
Db        3138 GAUAAAGAAGCUCUGCUUUCAAGAGGGUAUUCAGAUGUUCACACUGUGCAUGAAGUGCAA 3197

Qy        3185 GGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACGGCAACTCCACTGACTCTGATT 3244
               || || || :     ||:|: :| |: |: || :: ||  | || ||| :  |  : |::
Db        3198 GGCGAGACAUACUCUGAUGUUUCACUAGUUAGGUUAACCCCUACACCAGUCUCCAUCAUU 3257
```

```
Qy        3245 TCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGACACACAAAGAGCTTCAAATAT 3304
                |         ||| ||:|:: : |:|||  :| | || |||||        :||| :|
Db        3258 GCAGGAGACAGCCCACAUGUUUUGGUCGCAUUGUCAAGGCACACCUGUUCGCUCAAGUAC 3317

Qy        3305 TACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGTGATTTGTCTTCTTTAAGCTCC 3364
               :|||| |: |:  : ||:||:::||:    |: |::|| ||: :        : |||:|
Db        3318 UACACUGUUGUUAUGGAUCCUUUAGUUAGUAUCAUUAGAGAUCUAGAGAAACUUAGCUCG 3377

Qy        3365 TTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGATAGCAATTACAGATGGATGCA 3424
               : | : ::||| |:|:|:| ||: || |||||      |:|||||::|||||: ||  |
Db        3378 UACUUGUUAGAUAUGUAUAAGGUCGAUGCAGGAACACAAUAGCAAUUACAGAUUGACUCG 3437

Qy        3425 GTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAATCAGGAGACTTTCCAGATCTA 3484
               |:|::||||||:   ||:|: :::|: ||| | ||  || | || ||  :: | ||: :
Db        3438 GUGUUCAAAGGUUCCAAUCUUUUUGUUGCAGCGCCAAAGACUGGUGAUAUUUCUGAUAUG 3497

Qy        3485 CAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACTATACTTAACAAGTATGATGCT 3544
               |||:: :| :| ||:   :| |:||| || || || || |:  : || || : :||:||:
Db        3498 CAGUUUUACUAUGAUAAGUGUCUCCCAGGCAACAGCACCAUGAUGAAUAAUUUUGAUGCU 3557

Qy        3545 GTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAGGATTGTGTTCTTGATTTTTCC 3604
               |::||||:||||::   :|| | :    : ||:|: || ||::|  :  : ||: : :|
Db        3558 GUUACCAUGAGGUUGACUGACAUUUCAUUGAAUGUCAAAGAUUGCAUAUUGGAUAUGUCU 3617

Qy        3605 AAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTAGAGCCAGTTTTGCGTACCGCG 3664
               ||   : :: |   ||| |||||    |    |   |:|   ||  :  : || || |||
Db        3618 AAGUCUGUUGCUGCGCCUAAGGAUCAAAUCAAACCACUAAUACCUAUGGUACGAACGGCG 3677

Qy        3665 GCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTGGTTGCAATGATTAAAAGAAAT 3724
               || |||  |||| |     | ||||:| : |||||: : |: || |:||::||||| ||
Db        3678 GCAGAAAUGCCACGCCAGACUGGACUAUUGGAAAAUUUAGUGGCGAUGAUUAAAAGGAAC 3737

Qy        3725 TTCAACGCACCAGACCTGACGGGGACGATTGACATTGAGAGCACCGCATCTGTTGTAGTA 3784
               :: |||||||| ||  :| | || |  |::|| |::|| |  || |||:|: : |: |:|
Db        3738 UUUAACGCACCCGAGUUGUCUGGCAUCAUUGAUAUUGAAAAUACUGCAUCUUUAGUUGUA 3797

Qy        3785 GATAAGTTTTTTGATAGCTATTTTATTAAAAAAGAAAAATACACAAAAAATATTGCTGGA 3844
               ||:|||::::::||:|| :|:::  ::||| || ||| | |  |||| || | :| :
Db        3798 GAUAAGUUUUUUGAUAGUUAUUUGCUUAAAGAAAAAAGAAAACCAAAUAAAAAUGUUUCU 3857

Qy        3845 GTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAACAGGAAAGAAGTACTATTGGAC 3904
                :| : |  |  || :|  : |  |||:||:: |||||   | || | |:|  | : | |
Db        3858 UUGUUCAGUAGAGAGUCUCUCAAUAGAUGGUUAGAAAAGCAGGAACAGGUAACAAUAGGC 3917

Qy        3905 GACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATCGATCAGTACAAGCACATGATC 3964
                |  : ||  | :   |::::  |||: :||| ||  : ||:|||:|||  ||||:||:
Db        3918 CAGCUCGCAGAUUUUGAUUUUGUAGAUUUGCCAGCAGUUGAUCAGUACAGACACAUGAUU 3977

Qy        3965 AAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAGAATGAATACCCTGCTCTGCAA 4024
               || || ||||| || || |||::||||  ::|||: || |  || :|||| ||: :|||
Db        3978 AAAGCACAACCCAAGCAAAAAUUGGACACUUCAAUCCAAACGGAGUACCCGGCUUUGCAG 4037

Qy        4025 ACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTGGCCGGTTTCT---CAGAGCTT 4081
               || |::|: :||||::| ||  |||:||| |  |: :: | |   :: :     ||||::
Db        4038 ACGAUUGUGUACCAUUCAAAAAAGAUCAAUGCAAUAUUUGGCCCGUUGUUUAGUGAGCUU 4097

Qy        4082 ACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTTCTTTTCTTTACTAGGAAAACT 4141
               || |||    : |: ||     ::||::| |  |  ::: : :: :: || || || ||
Db        4098 ACUAGGCAAUUACUGGACAGUGUUGAUUCGAGCAGAUUUUUGUUUUUCACAAGAAAGACA 4157

Qy        4142 CCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCGCACGTTCCTATGGATGTGTTA 4201
               ||||  ||||:: | || :: ::|   ||:|:||||   || |: || |:|||:|: ::
Db        4158 CCAGCGCAGAUUGAGGAUUUCUUCGGAGAUCUCGACAGUCAUGUGCCGAUGGAUGUCUUG 4217

Qy        4202 GAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAGTTTCATTGTGCTGTAGAGTAT 4261
               || |:|||:|: :| || :| || || :| ||||| || :: || :|:|| |:||| :|
Db        4218 GAGCUGGAUAUAUCAAAAUACGACAAAUCUCAGAAUGAAUUCCACUGUGCAGUAGAAUAC 4277

Qy        4262 GAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCCGAAGTGTGGAAACAAGGGCAC 4321
               || |: :||  ||||::|||: :  | || :: ::||  ||||: :|||||||||||||
Db        4278 GAGAUCUGGCGAAGAUUGGGUUUUGAAGACUUCUUGGGAGAAGUUUGGAAACAAGGGCAU 4337

Qy        4322 AGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAGACATGTCTGTGGTATCAAAGG 4381
               || || || ||  : |||||::| |  || || |: || || :|  : :||:|:|||||
Db        4338 AGAAAGACCACCCUCAAGGAUUAUACCGCAGGUAUAAAAACUUGCAUCUGGUAUCAAAGA 4397

Qy        4382 AAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTTATAATAGCAGCTTGCTTGGGT 4441
               || ||||| || |: || || ::||: || || ||:|: |: |: || || :| ::||
Db        4398 AAGAGCGGGGACGUCACGACGUUCAUUGGAAACACUGUGAUCAUUGCUGCAUGUUUGGCC 4457

Qy        4442 TCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTTTGTGGAGACGATTCCGTTTTG 4501
               :| |:| : ||||:||| ||  : |: ||||| || ::::| || |||||:    :  :|
Db        4458 UCGAUGCUUCCGAUGGAGAAAAUAAUCAAAGGAGCCUUUUGCGGUGACGAUAGUCUGCUG 4517

Qy        4502 TATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCATGTGCTAATCTCATGTGGAAT 4561
               :| :::||||||||::  || :: || ||  : ||    :  || ||:|: |:|:||||:
Db        4518 UACUUUCCAAAGGGUUGUGAGUUUCCGGAUGUGCAACACUCCGCGAAUCUUAUGUGGAAU 4577

Qy        4562 TTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTTTGTGGTAGATACATCATACAC 4621
               :::|| || ||||:|: :| |||   |:| || :||::::| || |||:|  : |:|||
Db        4578 UUUGAAGCAAAACUGUUUAAAAAACAGUAUGGAUACUUUUGCGGAAGAUAUGUAAUACAU 4637

Qy        4622 CATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAGTTGATCTCCAAACTTGGGGCA 4681
               || || |  |||   |: |:|:|::| ||:||  : |||::||:|:| ||||::|| ||
Db        4638 CACGACAGAGGAUGCAUUGUGUAUUACGAUCCCCUAAAGUUGAUCUCGAAACUUGGUGCU 4697

Qy        4682 AAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGGGTGTCTTTGTGCGATGTTGCT 4741
               ||||| |:||||||::  || |||:: || |||:: ||   |:|: : :| ||:|::||:
Db        4698 AAACACAUCAAGGAUUGGGAACACUUGGAGGAGUUCAGAAGGUCUCUUUGUGAUGUUGCU 4757

Qy        4742 TGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTGAACGCAGCTATCAAGGAGGTT 4801
                 ::|| :    || :|    :     :   | ||| :| |||  ||: :   |||||::
Db        4758 GUUUCGUUGAACAAUUGUGCGUA---UUACACACAGUUGGACGACGCUGUAUGGGAGGUU 4814

Qy        4802 CATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGTGTTAACAAATTTTTGTGTGAT 4861
               ||:|| |||||   :   ||::||:::| :: :||  |: :    || : :::|: :||:
Db        4815 CAUAAGACCGCCCCUCCAGGUUCGUUUGUUUAUAAAAGUCUGGUGAAGUAUUUGUCUGAU 4874

Qy        4862 AAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAGTCTCAGAGATACTGTCAAAAT 4921
               ||| :: : :::|||| :::|::: :| |:|||: :   : : | ||  |  |: || |:
Db        4875 AAAGUUCUUUUUAGAAGUUUGUUUAUAGAUGGCUCUAGUUGUUAAAGGAAAAGUGAAUAU 4934

Qy        4922 TAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACTTCCGGCATTCATGACTAAGGT 4981
                |  |||:: |: || |:  | ||| | ||  |||:  : ||| |  :  : ||    |:
Db        4935 CAAUGAGUUUAUCGACCUGACAAAAAUGGAGAAGAUCUUACCGUCGAUGUUUACCCCUGU 4994

Qy        4982 CAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGCTGTTAAGAATGATAGTCTTTC 5041
                |||||:|::|     :| |  |: || || |: |:|| :  : ||||:||     : :|
Db        4995 AAAGAGUGUUAUGUGUUCCAAAGUUGAUAAAAUAAUGGUUCAUGAGAAUGAGUCAUUGUC 5054

Qy        5042 TGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAAAGGGTATGTGTGCTTAGCTGA 5101
                || |:  |  : |::||||| |::||| :  :: | |  || :| |: :| ::||| |
Db        5055 AGAGGUGAACCUUCUUAAAGGAGUUAAGCUUAUUGAUAGUGGAUACGUCUGUUUAGCCGG 5114

Qy        5102 TTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTGCCGTGGTGGTGTCAGTGTTTG 5161
               :::||: |:  | || |||:||||  : || || || :|| | || ||:|: || |: :|
Db        5115 UUUGGUCGUCACGGGCGAGUGGAACUUGCCUGACAAUUGCAGAGGAGGUGUGAGCGUGUG 5174

Qy        5162 TATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAACGCTGGGTGCGTATCACGCCCC 5221
               : : |: || || || |:| ||||     | || || || |: ||  | :|  || |  |
Db        5175 UCUGGUGGACAAAAGGAUGGAAAGAGCCGACGAGGCCACUCUCGGAUCUUACUACACAGC 5234

Qy        5222 TGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAATTATTCAATAACATCCGAGGA 5281
                ||:   || || |  :::   :: ||| :  : || ||::|: | |:|||  || ||||
Db        5235 AGCUGCAAAGAAAAGAUUUCAGUUCAAGGUCGUUCCCAAUUAUGCUAUAACCACCCAGGA 5294

Qy        5282 TGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAAAGGAGTGGCTATGGAAGAAGG 5341
                ||   |||  ||   :||||||: ::||: ||:|: | |   |:|   |:|  ||  ||
Db        5295 CGCGAUGAAAAACGUCUGGCAAGUUUUAGUUAAUAUUAGAAAUGUGAAGAUGUCAGCGGG 5354

Qy        5342 ATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGTAGTACATAAAAATAATGTAAG 5401
                : |:|:||  : :|: :||||:: |: :|  : :|: : |:  |:| |||:||: :||
Db        5355 UUUCUGUCCGCUUUCUCUGGAGUUUGUGUCGGUGUGUAUUGUUUAUAGAAAUAAUAUAAA 5414

Qy        5402 AAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGGCTCGCCAATTGAACTCACTGA 5461
               |  |||:::||| ||    |::   |  |:|| ||||||   ||| |: ||||: || ||
```

```
Db      5415 AUUAGGUUUGAGAGAGAAGAUUACAAACGUGAGAGACGGAGGGCCCAUGGAACUUACAGA 5474

Qy      5462 AAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGCTGTGAAACTCGAAAAGGTTCC 5521
             | | |: |::|| |||::| :||| || |: || |:| |  : |  |: | |||| ::|
Db      5475 AGAAGUCGUUGAUGAGUUCAUGGAAGAUGUCCCUAUGUCGAUCAGGCUUGCAAAGUUUCG 5534

Qy      5522 GG------------AAAACAAAAAAGAAATGGTAGGTAATAATGTTAATAAT-------- 5561
                           |||| |   | |       ||| || ||:  :| :||:
Db      5535 AUCUCGAACCGGAAAAAAGAGUGAUGUCCGCAAAGGGAAAAAUAGUAGUAAUGAUCGGUC 5594

Qy      5562 -------AAGAAAATAAATAACAGTGGTAAGAAGGGTTTTAAAATTGAGGAAATTGAGGA 5614
                    || || |   |:|  | :| :||| |   :     ||:       |   || |
Db      5595 AGUGCCGAACAAGAACUAUAGAAAUGUUAAGGAUUUUGGAGGAAUGAGUUUUAAAAAGAA 5654

Qy      5615 TAATGTAAGTGATGACGAGT---------CTATCGCGTCATCGAGTACGTTTTAATCAAT 5665
             :||: :||  ||:|| || :         |: :|||   |:||  : ||::::|   ||:
Db      5655 UAAUUUAAUCGAUGAUGAUUCGGAGGCUACUGUCGCCGAAUCGGAUUCGUUUUA---AAU 5711

Qy      5666 ATGCCTTATACAATCAACTCTCCGAGCCAATTTGTTTACTTATCTTCCGCTTACGCAGAT 5725
             |:| |::| |  |:||   |:||    || :: |: : |:: :| :| || :  || ||
Db      5712 AUGUCUUACAGUAUCACUACUCCAUCUCAGUUCGUGUUCUUGUCAUCAGCGUGGGCCGAC 5771

Qy      5726 CCTGTGCAGCTGATCAATCTGTGTACAAATGCATTGGGTAACCAGTTTCAAACGCAACAA 5785
             ||  :  || : |: ||: : |:|| ||:|| :: || || |||:::||||| ||||||
Db      5772 CCAAUAGAGUUAAUUAAUUUAUGUACUAAUGCCUUAGGAAAUCAGUUUCAAACACAACAA 5831

Qy      5786 GCTAGGACAACAGTCCAACAGCAATTTGCGGATGCCTGGAAACCTGTGCCTAGTATGACA 5845
             ||: | ||    |: |||   |||::    || |  :|||||||:   ||     : ||
Db      5832 GCUCGAACUGUCGUUCAAAGACAAUUCAGUGAGGUGUGGAAACCUUCACCACAAGUAACU 5891

Qy      5846 GTGAGATTTCCTGCATCGGATTTCTATGTGTATAGATATAATTCGACGCTTGATCCGTTG 5905
             |: || :: ||:|     || ::  | |:|:| || :| ||: ||    : || ||| :
Db      5892 GUUAGGUUCCCUGACAGUGACUUUAAGGUGUACAGGUACAAUGCGGUAUUAGACCCGCUA 5951

Qy      5906 ATCACGGCGTTATTAAATAGCTTTGATACTAGAAATAGAATAATAGAGGTTGATAATCAA 5965
              :||| ||  : ::|  :   ::  ||  ||:|||||:||||:||:||| |::|| ||:||
Db      5952 GUCACAGCACUGUUAGGUGCAUUCGACACUAGAAAUAGAAUAAUAGAAGUUGAAAAUCAG 6011

Qy      5966 CCCGCACCGAATACTACTGAAATCGTTAACGCGACTCAGAGGGTAGACGATGCTACTGTA 6025
              |    || |  ||: | ||||   :  | || ||:|  || |:|||||| || || |:
Db      6012 GCGAACCCCACGACUGCCGAAACGUUAGAUGCUACUCGUAGAGUAGACGACGCAACGGUG 6071

Qy      6026 GCTATAAGGGCTTCAATCAATAATTTGGCTAATGAACTGGTTCGTGGAACTGGCATGTTC 6085
             || |:||||    | |: ||:||:::       ||| :| :  | ||||| ||    :
Db      6072 GCCAUAAGGAGCGCGAUAAAUAAUUUAAUAGUAGAAUUGAUCAGAGGAACCGGAUCUUAU 6131

Qy      6086 AATCAAGCAGGCTTTGAGACTGCTAGTGGACTTGTCTGGACCACAACTCCGGCTACTTAG 6145
             ||:|        :: ||||   |:  :||  : |: :||||| |   :|| || || :||
Db      6132 AAUCGGAGCUCUUUCGAGAGCUCUUCUGGUUUGGUUUGGACCUCUGGUCCUGCAACCUAG 6191

Qy      6146 CTATT 6150
             | |::
Db      6192 CAAUU 6196

RESULT 8
US-10-828-029-4
; Sequence 4, Application US/10828029
; Publication No. US20040171813A1
;  GENERAL INFORMATION:
;       APPLICANT: GARGER, STEPHEN
;                  HOLTZ, R. BARRY
;                  McCULLOCH, MICHAEL
;                  TURPEN, THOMAS
;       TITLE OF INVENTION: A PROCESS FOR ISOLATING AND
;                           PURIFYING VIRUSES SOLUBLE PROTEINS AND PEPTIDES
;                           FROM PLANT SOURCES
;       NUMBER OF SEQUENCES: 5
;       CORRESPONDENCE ADDRESS:
;            ADDRESSEE: Howrey & Simon
;            STREET: 1299 Pennsylvania Avenue N.W.
;            CITY: Washington
;            STATE: DC
;            COUNTRY: USA
;            ZIP: 20004
;       COMPUTER READABLE FORM:
;            MEDIUM TYPE: Diskette
;            COMPUTER: IBM Compatible
;            OPERATING SYSTEM: DOS
;            SOFTWARE: FastSEQ for Windows Version 2.0
;       CURRENT APPLICATION DATA:
;            APPLICATION NUMBER: US/10/828,029
;            FILING DATE: 20-Apr-2004
;            CLASSIFICATION: <Unknown>
;       PRIOR APPLICATION DATA:
;            APPLICATION NUMBER: US/09/962,527
;            FILING DATE: 24-Sep-2001
;            APPLICATION NUMBER: 09/037,751
;            FILING DATE: 10-march-1998
;       ATTORNEY/AGENT INFORMATION:
;            NAME: Halluin, Albert P
;            REGISTRATION NUMBER: 25,277
;            REFERENCE/DOCKET NUMBER: 00801.0140.999
;       TELECOMMUNICATION INFORMATION:
;            TELEPHONE: 650-463-8109
;            TELEFAX: 650-463-8400
;            TELEX: <Unknown>
;  INFORMATION FOR SEQ ID NO: 4:
;       SEQUENCE CHARACTERISTICS:
;            LENGTH: 6475 base pairs
;            TYPE: nucleic acid
;            STRANDEDNESS: single
;            TOPOLOGY: unknown
;       MOLECULE TYPE: Genomic RNA
;       SEQUENCE DESCRIPTION: SEQ ID NO: 4:
US-10-828-029-4

  Query Match             38.6%;  Score 2452.2;  DB 19;  Length 6475;
  Best Local Similarity   44.8%;  Pred. No. 0;
  Matches 2770;  Conservative 1147;  Mismatches 2208;  Indels   60;  Gaps    8;

Qy        20 ACAACAACAATTAAAACAAAAACAACATATTACAAACAACAAACAACAACAATGGCACAC 79
             || |  |  |  |||  | ||||||||:   |   || |   ||||  ||||:|||| ||
Db        18 ACCAACAACAACAAACAACAAACAACAUUACAAUUACUAUUUACAAUUACAAUGGCAUAC 77

Qy        80 ATACAATCTATAATTAGCAACGCCCTTCTTGAAAGCGTGAGTGGTAAAAACACTCTCGTT 139
             | ||| |    |  |     ||  : |: || |  |:  | || || ||| |  :  |:
Db        78 ACACAGACAGCUACCACAUCAGCUUUGCUGGACACUGUCCGAGGAAACAACUCCUUGGUC 137

Qy       140 AATGACCTTGCAAGAAGGCGCATGTACGATACGGCCGTGGAAGAATTTAACGCCCGCGAC 199
             ||:|| |: ||||   | ||  : :|||| || || |: ||||| :::||||| || |||
Db       138 AAUGAUCUAGCAAAGCGUCGUCUUUACGACACAGCGGUUGAAGAGUUUAACGCUCGUGAC 197

Qy       200 CGTAGACCAAAGGTCAACTTTTCCAAAACTATTAGCGAAGAGCAAACGCTTCTAGTCTCC 259
             || || || ||||: ||||::::| |||   |: ||||| ||||| ||||:: : |   ||
Db       198 CGCAGGCCCAAGGUGAACUUUUCAAAAGUAAUAAGCGAGGAGCAGACGCUUAUUGCUACC 257

Qy       260 AACGCGTACCCGGAGTTCCAGATTACCTTTTATAATACTCAAAATGCCGTACACAGTTTG 319
                |||:| || || ::||| |::|| ::::|:|| || |||||:||||: ||     :
Db       258 CGGGCGUAUCCAGAAUUCCAAAUUACAUUUUAUAACACGCAAAAUGCCGUGCAUUCGCUU 317

Qy       320 GCTGGAGGTTTGAGAGCATTAGAATTGGAATATCTGATGCTACAAGTTCCCTATGGATCG 379
             || || || ::| || | ::|||| :||||:|:|:||:| : ||| ::|||:| |||:|
Db       318 GCAGGUGGAUUGCGAUCUUUAGAACUGGAAUAUCUGAUGAUGCAAAUUCCCUACGGAUCA 377

Qy       380 CCGACATATGATATAGGTGGGAACTTTGCAGCACATTTGTTCAAAGGCAGGGATTACGTG 439
               ||| :|:|| |:||| ||||| :::||| | ||: :|::||| ||  |  |  :| |:
Db       378 UUGACUUAUGACAUAGGCGGGAAUUUUGCAUCGCAUCUGUUCAAGGGACGAGCAUAUGUA 437

Qy       440 CATTGCTGTATGCCCAATCTGGACATACGAGATATAATGAGGCACGAAGGACAAAAGGAC 499
             || :||:| |:|||||| |:|||| : ||||| |: |:| |||||||||| || || |||
Db       438 CACUGCUGCAUGCCCAACCUGGACGUUCGAGACAUCAUGCGGCACGAAGGCCAGAAAGAC 497

Qy       500 TCAATTGAGATGTATTTGTCCAGATTGTCTCGTTCTAACAAGGTAATTCCTGAGTTTCAA 559
                |::||  : :|  : :| ||  :     |       ||   | : ||  | :: |||
Db       498 AGUAUUGAACUAUACCUUUCUAGGCUAGAGAGAGGGGGGAAAACAGUCCCCAACUUCCAA 557
```

```
Qy     560 AGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAAGTCTGCTGCTCTAAAACTTTT 619
           | ||| || ::: |||| :| ||||||  :||  | || |    |:|    || ||:::
Db     558 AAGGAAGCAUUUGACAGAUACGCAGAAAUUCCUGAAGACGCUGUCUGUCACAAUACUUUC 617

Qy     620 CAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGAAGATACGCTGTTGCTCTGCAC 679
           |||      |||   || |||    || |   || |||   :| ||  ::|| |: |||
Db     618 CAGACAAUGCGACAUCAGCCGAUGCAGCAAUCAGGCAGAGUGUAUGCCAUUGCGCUACAC 677

Qy     680 AGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCGTTAATATCTAAGAATATACAT 739
           ||  : :|:|| |: || |   |:|||:: || || ||  :  :    || ||: : ||:
Db     678 AGCAUAUAUGACAUACCAGCCGAUGAGUUCGGGGCGGCACUCUUGAGGAAAAAUGUCCAU 737

Qy     740 GTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTACTAGACCAGACGGAGGTTACG 799
              :| :|:|| ||:: |   ::  | ||     :  : |: ||  |  |  | |: |
Db     738 ACGUGCUAUGCCGCUUUCCACUUCUCUGAGAACCUGCUUCUUGAAGAUUCAUACGUCAAU 797

Qy     800 CTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGATGATGTTTCTTTTTTCTTTGCT 859
            :  | ||||:   |||   :::     | || || ||  |  :  | ::::  :::||
Db     798 UUGGACGAAAUCAACGCGUGUUUUUCGCGCGAUGGAGACAAGUUGACCUUUUCUUUUGCA 857

Qy     860 GATGAAAGTACTTTAAATTATAGTCATAAATACAAAAATATCTTGCATTATGTAGTTAAA 919
              || ||:||: : ||::|: |:||:|  :|    ||:|:  :  | :|:|:    |||
Db     858 UCAGAGAGUACUCUUAAUUAUUGUCAUAGUUAUUCUAAUAUUCUUAAGUAUGUGUGCAAA 917

Qy     920 TCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAGGAATTTTTAGTCACTAGGGTT 979
            |::||:: || || :|:| :|||   |:::|| : |||| :::::||:||| || |::
Db     918 ACUUACUUCCCGGCCUCUAAUAGAGAGGUUUACAUGAAGGAGUUUUUAGUCACCAGAGUU 977

Qy     980 AATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTATATTCTGTACAAGAGTGTTAGA 1039
           ||:|| :||::::|:|| ::: | | | :|||:|| : : :: :|:||||  |:|:
Db     978 AAUACCUGGUUUUGUAAGUUUUCUAGAAUAGAUACUUUUCUUUUGUACAAAGGUGUGGCC 1037

Qy    1040 CAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATGGAAGACGCCTTTGCTTACAAG 1099
           ||   | |    ||:||:|| |||:: :|:   || |:||||||||| :    ::||||
Db    1038 CAUAAAAGUGUAGAUAGUGAGCAGUUUUAUACUGCAAUGGAAGACGCAUGGCAUUACAAA 1097

Qy    1100 AAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTTAGAGACACGGCTTCGGTTAAC 1159
           || ||  : || |:|: |||||  || |||    :| ::   ||  |  |  :| |: ||
Db    1098 AAGACUCUUGCAAUGUGCAACAGCGAGAGAAUCCUCCUUGAGGAUUCAUCAUCAGUCAAU 1157

Qy    1160 TTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCGCTGTTTGAGGGTTCTATTACC 1219
           :  :||:: || || |:|| ||| |:||: |: |:|||  : :: ||   ::|: :
Db    1158 UACUGGUUUCCCAAAAUGAGGGAUAUGGUCAUCGUACCAUUAUUCGACAUUUCUUUGGAG 1217

Qy    1220 AGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGTGACTTCGTTTACACAGTGCTT 1279
           |  |  |||| |||  | |  || |:| : |:       || ::||: :  ||||:||::
Db    1218 ACUAGUAAGAGGACGCGCAAGGAAGUCUUAGUGUCCAAGGAUUUCGUGUUUACAGUGCUU 1277

Qy    1280 AATCATATCAGAACATATCAAGCCAAAGCGTTAACTTACCAGAACGTATTATCTTTCGTG 1339
           || || |:  |||||:| || ||||| : || :||   || |: ::  :| :: |: |:
Db    1278 AACCACAUUCGAACAUACCAGGCGAAAGCUCUUACAUACGCAAAUGUUUUGUCCUUUGUC 1337

Qy    1340 GAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACTGCTAGGTCTGAATGGGATGTA 1399
           || :| |:  ||:|  | |: |: |: || ||:|: || || |||:| ||||:||||:|:
Db    1338 GAAUCGAUUCGAUCGAGGGUAAUCAUUAACGGUGUGACAGCGAGGUCCGAAUGGGAUGUG 1397

Qy    1400 GATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTCTTGCAGACTAAGCTGGCTGCG 1459
           || ||| |  :  : ||| ||::|:| |:||| :: : | :||| ||:||||: ||: || |
Db    1398 GACAAAUCUUUGUUACAAUCCUUGUCCAUGACGUUUUACCUGCAUACUAAGCUUGCCGUU 1457

Qy    1460 CTTCAAGACGATATAGTAATGGGAAAGTTTCGGTGCTTGGATAAGACCACTTCTGAACTT 1519
           |:  | || ||  :| : |:  | |||::: |   |      || ||    :   | | :
Db    1458 CUAAAGGAUGACUUACUGAUUAGCAAGUUUAGUCUCGGUUCGAAAACGGUGUGCCAGCAU 1517

Qy    1520 ATTTGGGATGAGGTGGGCAAATTTTTTGGAAACGTTTTCCCCACTATCAAAGAGAGATTG 1579
            : :||||:||| :          :::|| ||||  :: ||| |  : ||||||||  :
Db    1518 GUGUGGGAUGAGAUUUCGCUGGCGUUUGGGAACGCAUUUCCCUCCGUGAAAGAGAGGCUC 1577

Qy    1580 GTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTGAAGATCAAGATCCCAGATCTG 1639
            :|| ||||||| :: :    |:    |   | ||  :  |||:|| | : || ||:|:
Db    1578 UUGAACAGGAAACUUAUCAGAGUGGCAGGCGACGCAUUAGAGAUCAGGGUGCCUGAUCUA 1637

Qy    1640 TATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACCAAGTCTGAGGAGTTACCGCAT 1699
           :|:|: || :   | ||||| :: |:  |:|| :|||     :|:| |||   : ||
Db    1638 UAUGUGACCUUCCACGACAGAUUAGUGACUGAGUACAAGGCCUCUGUGGACAUGCCUGCG 1697

Qy    1700 CTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATGTACGACGCGTTATCAGAATTA 1759
           |: || |: | |||| |  : |||||| | ||    |:|:|| | ||  : :|||| ::|
Db    1698 CUUGACAUUAGGAAGAAGAUGGAAGAAACGGAAGUGAUGUACAAUGCACUUUCAGAGUUA 1757

Qy    1760 TCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAGTTCAAAGACATGTGCAAGGCT 1819
           :|  :  : | ||   |:|| || ::|||: : |     ::     | |:|:|| |  |:
Db    1758 UCGGUGUUAAGGGAGUCUGACAAAUUCGAUGUUGAUGUUUUUUCCCAGAUGUGCCAAUCU 1817

Qy    1820 TTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTTGCAGTGGCCGAGAATAGAAGC 1879
           :: || |::   ||      ||||||    |: |: |: || |:       ||:   |||
Db    1818 UUGGAAGUUGACCCAAUGACGGCAGCGAAGGUUAUAGUCGCGGUCAUGAGCAAUGAGAGC 1877

Qy    1880 GGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAATGTGGCTAAGGCTCT------T 1933
           ||: : ||:|: || :::||    || || |||| |||:|: ||    ||: :      :
Db    1878 GGUCUGACUCUCACAUUUGAACGACCUACUGAGGCGAAUGUUGCGCUAGCUUUACAGGAU 1937

Qy    1934 AAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCGACATCCGAAGAGGTGAACGTA 1993
            ||   | ||| :| || |  |   :     ::    | | |   |  || |
Db    1938 CAAGAGAAGGCUUCAGAAGGUGCUUUGGUAGUUACCUCAAGAGAAGUUGAAGAACCGUCC 1997

Qy    1994 AATAAATTTTCTATTGCTGAGAAAGGGAGATTGCCTGTGTGTGCAGAAAGTCATGGTTTG 2053
           |  ||   ::| |: ||      || |  |      |   |:   |   |  |:  :  |
Db    1998 AUGAAGGGUUCGAUGGCCAGAGGAGAGUUACAAUUAGCUGGUCUUGCUGGAGAUCAUCCG 2057

Qy    2054 ACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTCAACGATTTCCATAAGGCTTGC 2113
             |    |  | :   || |  | ||||| : |||:|  :  |  | :: ||:| |||
Db    2058 GAGUCGUCCUAUUCUAAGAACGAGGAGAUAGAGUCUUUAGAGCAGUUUCAUAUGGCAACG 2117

Qy    2114 GTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTCTACACTGGCTCACTCAAAGTT 2173
           |  ||:    : |::   ||||| |:|   :|| ::|: :|||| ||  |  : ||||::
Db    2118 GCAGAUUCGUUAAUUCGUAAGCAGAUGAGCUCGAUUGUGUACACGGGUCCGAUUAAAGUU 2177

Qy    2174 CAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCGTTGTCCGCCACTGTATCAAAT 2233
           || ||||:||| |||: : : || ||  :|| ||| :|  : :| ||  |  |: :| ||:
Db    2178 CAGCAAAUGAAAAACUUUAUCGAUAGCCUGGUAGCAUCACUAUCUGCUGCGGUGUCGAAU 2237

Qy    2234 CTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCTGATTCCAGGGAGAAAGTTGGT 2293
           |:   ||||   |: || ||:  ||  |     :||   :||  || |  |  ||  ::||
Db    2238 CUCGUCAAGAUCCUCAAAGAUACAGCUGCUAUUGACCUUGAAACCCGUCAAAAGUUUGGA 2297

Qy    2294 GTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCTGCGGCCAAAGGTCATTCATGG 2353
           |: : |||:|:  | :  |  |||:|| :  :||||||  |||||||  |:||: ||:||
Db    2298 GUCUUGGAUGUUGCAUCUAGGAAGUGGUUAAUCAAACCAACGGCCAAGAGUCAUGCAUGG 2357

Qy    2354 GGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCACTTCTATCTTATGAAGGAGAT 2413
           || |::|:        ||  | ||||      :   || |:: :    :|:|| |   |
Db    2358 GGUGUUGUUGAAACCCACGCGAGGAAGUAUCAUGUGGCGCUUUUGGAAUAUGAUGAGCAG 2417

Qy    2414 AGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTATCATCTGATACAATGGTATAT 2473
            |  :||:|||       || :|||| || |: ||:|:    :|:||  |  : |: :|:
Db    2418 GGUGUGGUGACAUGCGAUGAUUGGAGAAGAGUAGCUGUCAGCUCUGAGUCUGUUGUUUAU 2477

Qy    2474 TCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATGAGAGACGGTGAACCCCACGAA 2533
           :| || |: || || |:|  || :|:| | |    :  || |||| ||||| ||| |
Db    2478 UCCGACAUGGCGAAACUCAGAACUCUGCGCAGACUGCUUCGAAACGGAGAACCGCAUGUC 2537

Qy    2534 CCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGTTGTGGAAAGTACAAAGGAGAT 2593
             :|  |||||| : |: |:|:||| || |: || || :|:|||||   ||||| |  :
Db    2538 AGUAGCGCAAAGGUUGUUCUUGUGGACGGAGUUCCGGGCUGUGGAAAAACCAAAGAAAUU 2597

Qy    2594 TTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTTCCTGGAAAACAAGCTGCTGCT 2653
            ::   ||  :: |: ::||:|| ||: : |: :: |: |:|| || ||||| ||| |
Db    2598 CUUUCCAGGGUUAAUUUUGAUGAAGAUCUAAUUUUAGUACCUGGGAAGCAAGCCGCGGAA 2657

Qy    2654 ATGATCAGAAGAAGGGCTAATTCATCTGGACTGATAAGAGCCACAATGGACAATGTGAGA 2713
           |:||:||||||| | || ||::| :| ||  : |:    ||||| | ||||| |: | |
Db    2658 AUGAUCAGAAGACGUGCGAAUUCCUCAGGGAUUAUUGUGGCCACGAAGGACAACGUUAAA 2717

Qy    2714 ACGGTAGATTCACTTCTAATGCATCCAAAACCGCGATCACA---------CAAGAGGCTT 2764
```

```
                 || |: ||::|  :  : |:| |:          |  |||          ||||||| :
Db          2718 ACCGUUGAUUCUUUCAUGAUGAAUUUUGGGAAAAGCACACGCUGUCAGUUCAAGAGGUUA 2777

Qy          2765 TTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTTAACTTCCTGGTGCTTATCTCT 2824
                 :: |::||:||||||::||:| :||| || ||::|:|::|| :: |: |:|   |: :|
Db          2778 UUCAUUGAUGAAGGGUUGAUGUUGCAUACUGGUUGUGUUAAUUUUCUUGUGGCGAUGUCA 2837

Qy          2825 GGTTGCGACATCGCATACATTTACGGAGATACACAGCAGATTCCTTTCATTAACAGAGTT 2884
                    :|||| |: |||:|  :::||||||| ||||||||||::|| : ||: || ||||::
Db          2838 UUGUGCGAAAUUGCAUAUGUUUACGGAGACACACAGCAGAUUCCAUACAUCAAUAGAGUU 2897

Qy          2885 CAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAAGTGGATGAAGTTGAGATGAGG 2944
                       ::||||:| |||   ||::::|  ||  :| |||:| | || |: ||||   |
Db          2898 UCAGGAUUCCCGUACCCCGCCCAUUUUGCCAAAUUGGAAGUUGACGAGGUGGAGACACGC 2957

Qy          2945 AGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTCCTACAATCGAAGTACGAAGGA 3004
                 || || || |:  | :| ||||  ||:|: |    ::  |:  |   ||  :| || ||
Db          2958 AGAACUACUCUCCGUUGUCCAGCCGAUGUCACACAUUAUCUGAACAGGAGAUAUGAGGGC 3017

Qy          3005 GCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCATCTGAGATGATAGGCGGTAAG 3064
                    |: |  | |||::|  | |:  ||   :| |: :|    ||||:| : |||||
Db          3018 UUUGUCAUGAGCACUUCUUCGGUUAAAAAGUCUGUUUCGCAGGAGAUGGUCGGCGGAGCC 3077

Qy          3065 GGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGGAAAATTGTAACTTTCACTCAGGCT 3124
                 |  |:  : ||     : :| |||||  :  | || || |:  : ||::: || ||  |
Db          3078 GCCGUGAUCAAUCCGAUCUCAAAACCCUUGCAUGGCAAGAUCCUGACUUUUACCCAAUCG 3137

Qy          3125 GATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTGAACACCGTTCATGAGATCCAA 3184
                 ||:|||   |   :       |  || :|:    |:|:  |||| |: ||:||  : |||
Db          3138 GAUAAAGAAGCUCUGCUUUCAAGAGGGUAUUCAGAUGUUCACACUGUGCAUGAAGUGCAA 3197

Qy          3185 GGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACGGCAACTCCACTGACTCTGATT 3244
                 || || || :     ||:|: :| |: |: || :: ||  | || ||| :  |  : |::
Db          3198 GGCGAGACAUACUCUGAUGUUUCACUAGUUAGGUUAACCCCUACACCAGUCUCCAUCAUU 3257

Qy          3245 TCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGACACACAAAGAGCTTCAAATAT 3304
                  |         ||| ||:|:: : |:|||  :| | || |||||        :||| :|
Db          3258 GCAGGAGACAGCCCACAUGUUUUGGUCGCAUUGUCAAGGCACACCUGUUCGCUCAAGUAC 3317

Qy          3305 TACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGTGATTTGTCTTCTTTAAGCTCC 3364
                 :|||| |: |:  : ||:||:::||:    |: |::|| ||: :        : |||:|
Db          3318 UACACUGUUGUUAUGGAUCCUUUAGUUAGUAUCAUUAGAGAUCUAGAGAAACUUAGCUCG 3377

Qy          3365 TTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGATAGCAATTACAGATGGATGCA 3424
                 : | : ::||| |:|:|:| ||: || ||||| |    |:|||||::|||||: ||  |
Db          3378 UACUUGUUAGAUAUGUAUAAGGUCGAUGCAGGAACACAAUAGCAAUUACAGAUUGACUCG 3437

Qy          3425 GTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAATCAGGAGACTTTCCAGATCTA 3484
                 |:|::||||||:   ||:|: :::|: ||| | || ||  | || ||  :: | ||: :
Db          3438 GUGUUCAAAGGUUCCAAUCUUUUUGUUGCAGCGCCAAAGACUGGUGAUAUUUCUGAUAUG 3497

Qy          3485 CAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACTATACTTAACAAGTATGATGCT 3544
                 |||:: :| :| ||:   :| |:||| || || || || |:  : || || : :||:||:
Db          3498 CAGUUUUACUAUGAUAAGUGUCUCCCAGGCAACAGCACCAUGAUGAAUAAUUUUGAUGCU 3557

Qy          3545 GTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAGGATTGTGTTCTTGATTTTTCC 3604
                 |::||||:||||::   :|| | :    : ||:|: || ||::|  :  : ||: : :|
Db          3558 GUUACCAUGAGGUUGACUGACAUUUCAUUGAAUGUCAAAGAUUGCAUAUUGGAUAUGUCU 3617

Qy          3605 AAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTAGAGCCAGTTTTGCGTACCGCG 3664
                 ||   : :: |   ||| |||||    |    |   |:|   ||  :  : || || |||
Db          3618 AAGUCUGUUGCUGCGCCUAAGGAUCAAAUCAAACCACUAAUACCUAUGGUACGAACGGCG 3677

Qy          3665 GCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTGGTTGCAATGATTAAAAGAAAT 3724
                 || |||  |||| |     | ||||:| : |||||: : |: || |:||::||||| ||
Db          3678 GCAGAAAUGCCACGCCAGACUGGACUAUUGGAAAAUUUAGUGGCGAUGAUUAAAAGGAAC 3737

Qy          3725 TTCAACGCACCAGACCTGACGGGGACGATTGACATTGAGAGCACCGCATCTGTTGTAGTA 3784
                 :: |||||||| ||  :| | || |  |::|| |::|| |  || |||:|: : |: |:|
Db          3738 UUUAACGCACCCGAGUUGUCUGGCAUCAUUGAUAUUGAAAAUACUGCAUCUUUAGUUGUA 3797

Qy          3785 GATAAGTTTTTTGATAGCTATTTTATTAAAAAAGAAAAATACACAAAAAATATTGCTGGA 3844
                 ||:|||::::::||:|| :|:::  ::||| || ||| | |  |||| || | :| :
Db          3798 GAUAAGUUUUUUGAUAGUUAUUUGCUUAAAGAAAAAAGAAAACCAAAUAAAAAUGUUUCU 3857

Qy          3845 GTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAACAGGAAAGAAGTACTATTGGAC 3904
                  :| : |  |  || :|  : |  |||:||:: |||||   |||    |:|  | : | |
Db          3858 UUGUUCAGUAGAGAGUCUCUCAAUAGAUGGUUAGAAAAGCAGGAACAGGUAACAAUAGGC 3917

Qy          3905 GACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATCGATCAGTACAAGCACATGATC 3964
                  |  : ||  | :   |::::  |||: :||| ||  : ||:|||:|||  ||||:||:
Db          3918 CAGCUCGCAGAUUUUGAUUUUGUAGAUUUGCCAGCAGUUGAUCAGUACAGACACAUGAUU 3977

Qy          3965 AAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAGAATGAATACCCTGCTCTGCAA 4024
                 || || ||||| || || |||::||||  ::|||: || |  || :|||| ||: :|||
Db          3978 AAAGCACAACCCAAGCAAAAAUUGGACACUUCAAUCCAAACGGAGUACCCGGCUUUGCAG 4037

Qy          4025 ACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTGGCCGGTTTCT---CAGAGCTT 4081
                 || |::|: :||||::| ||  |||:||| |  |: :: | |   :: :     ||||::
Db          4038 ACGAUUGUGUACCAUUCAAAAAAGAUCAAUGCAAUAUUUGGCCCGUUGUUUAGUGAGCUU 4097

Qy          4082 ACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTTCTTTTCTTTACTAGGAAAACT 4141
                 || |||    : |: ||     ::||::| |  |  ::: : :: :: || || || ||
Db          4098 ACUAGGCAAUUACUGGACAGUGUUGAUUCGAGCAGAUUUUUGUUUUUCACAAGAAAGACA 4157

Qy          4142 CCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCGCACGTTCCTATGGATGTGTTA 4201
                 ||||  |||||:: | || :: ::|   ||:|:||||   || |: || |:|||:|: ::
Db          4158 CCAGCGCAGAUUGAGGAUUUCUUCGGAGAUCUCGACAGUCAUGUGCCGAUGGAUGUCUUG 4217

Qy          4202 GAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAGTTTCATTGTGCTGTAGAGTAT 4261
                 || |:|||:|: :| || :| || || :| ||||| || :: || :|:|| |:||| :|
Db          4218 GAGCUGGAUAUAUCAAAAUACGACAAAUCUCAGAAUGAAUUCCACUGUGCAGUAGAAUAC 4277

Qy          4262 GAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCCGAAGTGTGGAAACAAGGGCAC 4321
                 || |: :||  ||||::|||: :  | || :: ::||  ||||: :|||||||||||||
Db          4278 GAGAUCUGGCGAAGAUUGGGUUUUGAAGACUUCUUGGGAGAAGUUUGGAAACAAGGGCAU 4337

Qy          4322 AGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAGACATGTCTGTGGTATCAAAGG 4381
                 || || || ||  : |||||::| |  || || |: || || :|  : :||:|:|||||
Db          4338 AGAAAGACCACCCUCAAGGAUUAUACCGCAGGUAUAAAAACUUGCAUCUGGUAUCAAAGA 4397

Qy          4382 AAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTTATAATAGCAGCTTGCTTGGGT 4441
                 || ||||| || |: || || ::||: || || ||:|: |: |: || || :| ::||
Db          4398 AAGAGCGGGGACGUCACGACGUUCAUUGGAAACACUGUGAUCAUUGCUGCAUGUUUGGCC 4457

Qy          4442 TCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTTTGTGGAGACGATTCCGTTTTG 4501
                 :| |:| : ||||:||| ||  : |: ||||| || ::::| || |||||:    :  :|
Db          4458 UCGAUGCUUCCGAUGGAGAAAAUAAUCAAAGGAGCCUUUUGCGGUGACGAUAGUCUGCUG 4517

Qy          4502 TATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCATGTGCTAATCTCATGTGGAAT 4561
                 :| :::||||||||::  || :: || ||  : ||    :  || ||:|: |:|:||||:
Db          4518 UACUUUCCAAAGGGUUGUGAGUUUCCGGAUGUGCAACACUCCGCGAAUCUUAUGUGGAAU 4577

Qy          4562 TTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTTTGTGGTAGATACATCATACAC 4621
                 :::|| || ||||:|:  | |||   |:| || :||::::| || |||:|  : |:|||
Db          4578 UUUGAAGCAAAACUGUUUAAAAAACAGUAUGGAUACUUUUGCGGAAGAUAUGUAAUACAU 4637

Qy          4622 CATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAGTTGATCTCCAAACTTGGGGCA 4681
                 || || |  |||   |: |:|:|::| ||:||  : |||::||:|:| ||||::|| ||
Db          4638 CACGACAGAGGAUGCAUUGUGUAUUACGAUCCCCUAAAGUUGAUCUCGAAACUUGGUGCU 4697

Qy          4682 AAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGGGTGTCTTTGTGCGATGTTGCT 4741
                 ||||| |:||||||::  || |||:: || |||:: ||   |:|: : :| ||:|::||:
Db          4698 AAACACAUCAAGGAUUGGGAACACUUGGAGGAGUUCAGAAGGUCUCUUUGUGAUGUUGCU 4757

Qy          4742 TGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTGAACGCAGCTATCAAGGAGGTT 4801
                   ::|| :    || :|    :     :   | ||| :| |||  ||: :   |||||::
Db          4758 GUUUCGUUGAACAAUUGUGCGUA---UUACACACAGUUGGACGACGCUGUAUGGGAGGUU 4814

Qy          4802 CATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGTGTTAACAAATTTTTGTGTGAT 4861
                 ||:|| |||||   :   ||::||:::| :: :||  |: :    || : :::|: :||:
Db          4815 CAUAAGACCGCCCCUCCAGGUUCGUUUGUUUAUAAAAGUCUGGUGAAGUAUUUGUCUGAU 4874

Qy          4862 AAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAGTCTCAGAGATACTGTCAAAAT 4921
                 ||| :: : :::|||| :::|::: :| |:|||: :   : : | ||  |  |: || |:
Db          4875 AAAGUUCUUUUUAGAAGUUUGUUUAUAGAUGGCUCUAGUUGUUAAAGGAAAAGUGAAUAU 4934
```

```
Qy        4922 TAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACTTCCGGCATTCATGACTAAGGT 4981
                |  |||:: |: || |:  | |||  |||  |||:  : ||| |  :  : ||    |:
Db        4935 CAAUGAGUUUAUCGACCUGACAAAAAUGGAGAAGAUCUUACCGUCGAUGUUUACCCCUGU 4994

Qy        4982 CAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGCTGTTAAGAATGATAGTCTTTC 5041
                |||||:|::|     :| |  |: || || |: |:|| :  : ||||:||     : :|
Db        4995 AAAGAGUGUUAUGUGUUCCAAAGUUGAUAAAAUAAUGGUUCAUGAGAAUGAGUCAUUGUC 5054

Qy        5042 TGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAAAGGGTATGTGTGCTTAGCTGA 5101
                || |:  |  : |::||||| |::||| :  :: | ||| :| |: :| ::||| |
Db        5055 AGAGGUGAACCUUCUUAAAGGAGUUAAGCUUAUUGAUAGUGGAUACGUCUGUUUAGCCGG 5114

Qy        5102 TTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTGCCGTGGTGGTGTCAGTGTTTG 5161
               :::||: |:  | || |||:||||  : || || || :|| | || ||:|: || |: :|
Db        5115 UUUGGUCGUCACGGGCGAGUGGAACUUGCCUGACAAUUGCAGAGGAGGUGUGAGCGUGUG 5174

Qy        5162 TATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAACGCTGGGTGCGTATCACGCCCC 5221
               : : |: || || || |:| ||||     | || || || |: ||  | :|  || |  |
Db        5175 UCUGGUGGACAAAAGGAUGGAAAGAGCCGACGAGGCCACUCUCGGAUCUUACUACACAGC 5234

Qy        5222 TGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAATTATTCAATAACATCCGAGGA 5281
                ||:   || || |  :::   :: ||| :  : || ||::|: | |:|||  || ||||
Db        5235 AGCUGCAAAGAAAAGAUUUCAGUUCAAGGUCGUUCCCAAUUAUGCUAUAACCACCCAGGA 5294

Qy        5282 TGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAAAGGAGTGGCTATGGAAGAAGG 5341
                ||   |||  ||   :||||||: ::||: ||:|: | |   |:|   |:|  ||  ||
Db        5295 CGCGAUGAAAAACGUCUGGCAAGUUUUAGUUAAUAUUAGAAAUGUGAAGAUGUCAGCGGG 5354

Qy        5342 ATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGTAGTACATAAAAATAATGTAAG 5401
                : |:|:||  : :|: :||||:: |: :|  : :|: : |:  |:| ||:||: :||
Db        5355 UUUCUGUCCGCUUUCUCUGGAGUUUGUGUCGGUGUGUAUUGUUUAUAGAAAUAAUAUAAA 5414

Qy        5402 AAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGGCTCGCCAATTGAACTCACTGA 5461
               |  |||:::||| ||    |::   |  |:|| ||||||   ||| |: ||||: || ||
Db        5415 AUUAGGUUUGAGAGAGAAGAUUACAAACGUGAGAGACGGAGGGCCCAUGGAACUUACAGA 5474

Qy        5462 AAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGCTGTGAAACTCGAAAAGGTTCC 5521
               | | |: |::|| |||::| :||| || |: || |:| |  : |  |: | |||| ::|
Db        5475 AGAAGUCGUUGAUGAGUUCAUGGAAGAUGUCCCUAUGUCGAUCAGGCUUGCAAAGUUUCG 5534

Qy        5522 GG------------AAAACAAAAAAGAAATGGTAGGTAATAATGTTAATAAT-------- 5561
                             |||| |   | |       ||| || ||:  :| :||:
Db        5535 AUCUCGAACCGGAAAAAAGAGUGAUGUCCGCAAAGGGAAAAAUAGUAGUAAUGAUCGGUC 5594

Qy        5562 -------AAGAAAATAAATAACAGTGGTAAGAAGGGTTTTAAAATTGAGGAAATTGAGGA 5614
                      || || |   |:|  | :| :||| |   :     ||:       |   || |
Db        5595 AGUGCCGAACAAGAACUAUAGAAAUGUUAAGGAUUUUGGAGGAAUGAGUUUUAAAAAGAA 5654

Qy        5615 TAATGTAAGTGATGACGAGT---------CTATCGCGTCATCGAGTACGTTTTAATCAAT 5665
               :||: :||  ||:|| || :         |: :|||   |:||  : ||::::|   ||:
Db        5655 UAAUUUAAUCGAUGAUGAUUCGGAGGCUACUGUCGCCGAAUCGGAUUCGUUUUA---AAU 5711

Qy        5666 ATGCCTTATACAATCAACTCTCCGAGCCAATTTGTTTACTTATCTTCCGCTTACGCAGAT 5725
               |:| |::| |  |:||   |:||    || :: |: : |:: :| :| || :  || ||
Db        5712 AUGUCUUACAGUAUCACUACUCCAUCUCAGUUCGUGUUCUUGUCAUCAGCGUGGGCCGAC 5771

Qy        5726 CCTGTGCAGCTGATCAATCTGTGTACAAATGCATTGGGTAACCAGTTTCAAACGCAACAA 5785
               ||  :  || : |: ||: : :|:|| ||:|| :: || || |||:::|||| ||||||
Db        5772 CCAAUAGAGUUAAUUAAUUUAUGUACUAAUGCCUUAGGAAAUCAGUUUCAAACACAACAA 5831

Qy        5786 GCTAGGACAACAGTCCAACAGCAATTTGCGGATGCCTGGAAACCTGTGCCTAGTATGACA 5845
               ||: | ||    |: |||    |||::    || |  :|||||||:   ||     : ||
Db        5832 GCUCGAACUGUCGUUCAAAGACAAUUCAGUGAGGUGUGGAAACCUUCACCACAAGUAACU 5891

Qy        5846 GTGAGATTTCCTGCATCGGATTTCTATGTGTATAGATATAATTCGACGCTTGATCCGTTG 5905
               |: || :: ||:|     || ::  | |:|:| || :| ||: ||    :  || ||| :
Db        5892 GUUAGGUUCCCUGACAGUGACUUUAAGGUGUACAGGUACAAUGCGGUAUUAGACCCGCUA 5951

Qy        5906 ATCACGGCGTTATTAAATAGCTTTGATACTAGAAATAGAATAATAGAGGTTGATAATCAA 5965
                :||| ||  : ::|  :    :: || ||:|||||:||||:||:||| |::|| ||:||
Db        5952 GUCACAGCACUGUUAGGUGCAUUCGACACUAGAAAUAGAAUAAUAGAAGUUGAAAAUCAG 6011

Qy        5966 CCCGCACCGAATACTACTGAAATCGTTAACGCGACTCAGAGGGTAGACGATGCTACTGTA 6025
                |    || |  ||: | ||||   :  | || ||:|  || |:|||||| || || |:
Db        6012 GCGAACCCCACGACUGCCGAAACGUUAGAUGCUACUCGUAGAGUAGACGACGCAACGGUG 6071

Qy        6026 GCTATAAGGGCTTCAATCAATAATTTGGCTAATGAACTGGTTCGTGGAACTGGCATGTTC 6085
               || |:||||    | |: ||:||:::       ||| :| :  | |||||  ||    :
Db        6072 GCCAUAAGGAGCGCGAUAAAUAAUUUAAUAGUAGAAUUGAUCAGAGGAACCGGAUCUUAU 6131

Qy        6086 AATCAAGCAGGCTTTGAGACTGCTAGTGGACTTGTCTGGACCACAACTCCGGCTACTTAG 6145
               ||:|        :: ||||   |:  :||  : |: :||||| |   :|| || || :||
Db        6132 AAUCGGAGCUCUUUCGAGAGCUCUUCUGGUUUGGUUUGGACCUCUGGUCCUGCAACCUAG 6191

Qy        6146 CTATT 6150
               | |::
Db        6192 CAAUU 6196

RESULT 9
US-09-962-527-5
; Sequence 5, Application US/09962527
; Publication No. US20030049813A1
;  GENERAL INFORMATION:
;       APPLICANT: GARGER, STEPHEN
;                  HOLTZ, R. BARRY
;                  McCULLOCH, MICHAEL
;                  TURPEN, THOMAS
;       TITLE OF INVENTION: A PROCESS FOR ISOLATING AND
;                           PURIFYING VIRUSES SOLUBLE PROTEINS AND PEPTIDES
;                           FROM PLANT SOURCES
;       NUMBER OF SEQUENCES: 5
;       CORRESPONDENCE ADDRESS:
;            ADDRESSEE: Howrey & Simon
;            STREET: 1299 Pennsylvania Avenue N.W.
;            CITY: Washington
;            STATE: DC
;            COUNTRY: USA
;            ZIP: 20004
;       COMPUTER READABLE FORM:
;            MEDIUM TYPE: Diskette
;            COMPUTER: IBM Compatible
;            OPERATING SYSTEM: DOS
;            SOFTWARE: FastSEQ for Windows Version 2.0
;       CURRENT APPLICATION DATA:
;            APPLICATION NUMBER: US/09/962,527
;            FILING DATE: 24-Sep-2001
;            CLASSIFICATION: <Unknown>
;       PRIOR APPLICATION DATA:
;            APPLICATION NUMBER: 09/037,751
;            FILING DATE: 10-march-1998
;       ATTORNEY/AGENT INFORMATION:
;            NAME: Halluin, Albert P
;            REGISTRATION NUMBER: 25,277
;            REFERENCE/DOCKET NUMBER: 00801.0140.999
;       TELECOMMUNICATION INFORMATION:
;            TELEPHONE: 650-463-8109
;            TELEFAX: 650-463-8400
;            TELEX: <Unknown>
;   INFORMATION FOR SEQ ID NO: 5:
;       SEQUENCE CHARACTERISTICS:
;            LENGTH: 6446 base pairs
;            TYPE: nucleic acid
;            STRANDEDNESS: single
;            TOPOLOGY: unknown
;       MOLECULE TYPE: Genomic RNA
;       SEQUENCE DESCRIPTION: SEQ ID NO: 5:
US-09-962-527-5

  Query Match             38.5%;  Score 2449.8;  DB 10;  Length 6446;
  Best Local Similarity   44.8%;  Pred. No. 0;
  Matches 2771;  Conservative 1146;  Mismatches 2212;  Indels   60;  Gaps    8;

Qy          20 ACAACAACAATTAAAACAAAAACAACATATTACAAACAACAAACAACAACAATGGCACAC 79
               || |  |  |  |||  | ||||||||:   |   || |   ||||  ||||:|||| ||
```

```
Db          18 ACCAACAACAACAAACAACAAACAACAUUACAAUUACUAUUUACAAUUACAAUGGCAUAC 77

Qy          80 ATACAATCTATAATTAGCAACGCCCTTCTTGAAAGCGTGAGTGGTAAAAACACTCTCGTT 139
               | |||  |    |  |     ||  : |: || |  |:  | || ||| || |  : |:
Db          78 ACACAGACAGCUACCACAUCAGCUUUGCUGGACACUGUCCGAGGAAACAACUCCUUGGUC 137

Qy         140 AATGACCTTGCAAGAAGGCGCATGTACGATACGGCCGTGGAAGAATTTAACGCCCGCGAC 199
               ||:|| |: ||||   | ||  : :|||| || || |: ||||| :::||||| || |||
Db         138 AAUGAUCUAGCAAAGCGUCGUCUUUACGACACAGCGGUUGAAGAGUUUAACGCUCGUGAC 197

Qy         200 CGTAGACCAAAGGTCAACTTTTCCAAAACTATTAGCGAAGAGCAAACGCTTCTAGTCTCC 259
               || || || ||||: |||::::| |||   |: ||||| ||||| ||||:: : |   ||
Db         198 CGCAGGCCCAAGGUGAACUUUUCAAAAGUAAUAAGCGAGGAGCAGACGCUUAUUGCUACC 257

Qy         260 AACGCGTACCCGGAGTTCCAGATTACCTTTTATAATACTCAAAATGCCGTACACAGTTTG 319
                  |||:| || || ::||| |::|| ::::|:|| || ||||||:||||: ||     :
Db         258 CGGGCGUAUCCAGAAUUCCAAAUUACAUUUUAUAACACGCAAAAUGCCGUGCAUUCGCUU 317

Qy         320 GCTGGAGGTTTGAGAGCATTAGAATTGGAATATCTGATGCTACAAGTTCCCTATGGATCG 379
               || || || ::| || | ::|||| :||||:|:|:||:| : ||| ::|||:| |||:|
Db         318 GCAGGUGGAUUGCGAUCUUUAGAACUGGAAUAUCUGAUGAUGCAAAUUCCCUACGGAUCA 377

Qy         380 CCGACATATGATATAGGTGGGAACTTTGCAGCACATTTGTTCAAAGGCAGGGATTACGTG 439
                 ||| :|:|| |:||| ||||| :::||| | ||: :|::||| ||  | |  :| |:
Db         378 UUGACUUAUGACAUAGGCGGGAAUUUUGCAUCGCAUCUGUUCAAGGGACGAGCAUAUGUA 437

Qy         440 CATTGCTGTATGCCCAATCTGGACATACGAGATATAATGAGGCACGAAGGACAAAAGGAC 499
               || :||:| |:|||||| |:|||| : ||||| |: |:| |||||||||| || || |||
Db         438 CACUGCUGCAUGCCCAACCUGGACGUUCGAGACAUCAUGCGGCACGAAGGCCAGAAAGAC 497

Qy         500 TCAATTGAGATGTATTTGTCCAGATTGTCTCGTTCTAACAAGGTAATTCCTGAGTTTCAA 559
                  |::||  : :|  : :| ||  :     |       ||   | : ||  | :: |||
Db         498 AGUAUUGAACUAUACCUUUCUAGGCUAGAGAGAGGGGGGAAAACAGUCCCCAACUUCCAA 557

Qy         560 AGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAAGTCTGCTGCTCTAAAACTTTT 619
               | ||| || ::: |||| :| ||||||  :||  | || |    |:|    || ||:::
Db         558 AAGGAAGCAUUUGACAGAUACGCAGAAAUUCCUGAAGACGCUGUCUGUCACAAUACUUUC 617

Qy         620 CAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGAAGATACGCTGTTGCTCTGCAC 679
               |||      |||   || |||    || |    || |||   :| ||  ::|| |: |||
Db         618 CAGACAAUGCGACAUCAGCCGAUGCAGCAAUCAGGCAGAGUGUAUGCCAUUGCGCUACAC 677

Qy         680 AGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCGTTAATATCTAAGAATATACAT 739
               ||  : :|:|| |: || |   |:|||:: || || ||  :  :    || ||: : ||:
Db         678 AGCAUAUAUGACAUACCAGCCGAUGAGUUCGGGGCGGCACUCUUGAGGAAAAAUGUCCAU 737

Qy         740 GTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTACTAGACCAGACGGAGGTTACG 799
                  :| :|:|| ||:: |   ::  | ||     :  : |: ||  |  |  | |: |
Db         738 ACGUGCUAUGCCGCUUUCCACUUCUCUGAGAACCUGCUUCUUGAAGAUUCAUACGUCAAU 797

Qy         800 CTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGATGATGTTTCTTTTTTCTTTGCT 859
                :  | ||||:   |||   :::     | || || ||  |  :  | ::::  :::||
Db         798 UUGGACGAAAUCAACGCGUGUUUUUCGCGCGAUGGAGACAAGUUGACCUUUUCUUUUGCA 857

Qy         860 GATGAAAGTACTTTAAATTATAGTCATAAATACAAAAATATCTTGCATTATGTAGTTAAA 919
                  || ||:||: : ||::|: |:||:|  :|    ||:|:  :  | :|:|:    |||
Db         858 UCAGAGAGUACUCUUAAUUAUUGUCAUAGUUAUUCUAAUAUUCUUAAGUAUGUGUGCAAA 917

Qy         920 TCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAGGAATTTTTAGTCACTAGGGTT 979
                |::||:: || || :|:| :|||   |:::|| : ||||| :::::||:||| || |::
Db         918 ACUUACUUCCCGGCCUCUAAUAGAGAGGUUUACAUGAAGGAGUUUUUAGUCACCAGAGUU 977

Qy         980 AATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTATATTCTGTACAAGAGTGTTAGA 1039
               ||:|| :||::::|:|| ::: | | | :|||:|| : : :: :|:||||  |:|:
Db         978 AAUACCUGGUUUUGUAAGUUUUCUAGAAUAGAUACUUUUCUUUUGUACAAAGGUGUGGCC 1037

Qy        1040 CAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATGGAAGACGCCTTTGCTTACAAG 1099
               ||   | |    ||:||:|| |||:: :|:   || |:||||||||| :    ::||||
Db        1038 CAUAAAAGUGUAGAUAGUGAGCAGUUUUAUACUGCAAUGGAAGACGCAUGGCAUUACAAA 1097

Qy        1100 AAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTTAGAGACACGGCTTCGGTTAAC 1159
               || ||  : || |:|: |||||  || |||    :| ::   ||  |  | :| |: ||
Db        1098 AAGACUCUUGCAAUGUGCAACAGCGAGAGAAUCCUCCUUGAGGAUUCAUCAUCAGUCAAU 1157

Qy        1160 TTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCGCTGTTTGAGGGTTCTATTACC 1219
               :  :||:: || || |:|| ||| |:||: |: |:|||  : :: ||   ::|: :
Db        1158 UACUGGUUUCCCAAAAUGAGGGAUAUGGUCAUCGUACCAUUAUUCGACAUUUCUUUGGAG 1217

Qy        1220 AGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGTGACTTCGTTTACACAGTGCTT 1279
               |  |  |||| |||  | |  || |:| : |:       || ::||: :  ||||:||::
Db        1218 ACUAGUAAGAGGACGCGCAAGGAAGUCUUAGUGUCCAAGGAUUUCGUGUUUACAGUGCUU 1277

Qy        1280 AATCATATCAGAACATATCAAGCCAAAGCGTTAACTTACCAGAACGTATTATCTTTCGTG 1339
               || || |:  |||||:| || || |||||  : || :||   || |: :: :| :: |:
Db        1278 AACCACAUUCGAACAUACCAGGCGAAAGCUCUUACAUACGCAAAUGUUUUGUCCUUUGUC 1337

Qy        1340 GAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACTGCTAGGTCTGAATGGGATGTA 1399
               || :| |:  ||:|  | |: |: |: || ||:|: || || |||:| |||:||||:|:
Db        1338 GAAUCGAUUCGAUCGAGGGUAAUCAUUAACGGUGUGACAGCGAGGUCCGAAUGGGAUGUG 1397

Qy        1400 GATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTCTTGCAGACTAAGCTGGCTGCG 1459
               || ||| |  :  : ||| ||::|:| |:||| :: : | :||| ||:||||: || |
Db        1398 GACAAAUCUUUGUUACAAUCCUUGUCCAUGACGUUUUACCUGCAUACUAAGCUUGCCGUU 1457

Qy        1460 CTTCAAGACGATATAGTAATGGGAAAGTTTCGGTGCTTGGATAAGACCACTTCTGAACTT 1519
               |:  | || ||  :| : |:  | |||::: |   |      || ||    :   | | :
Db        1458 CUAAAGGAUGACUUACUGAUUAGCAAGUUUAGUCUCGGUUCGAAAACGGUGUGCCAGCAU 1517

Qy        1520 ATTTGGGATGAGGTGGGCAAATTTTTTGGAAACGTTTTCCCCACTATCAAAGAGAGATTG 1579
                : :||||:||| :          :::|| ||||  :: ||| |  : ||||||||  :
Db        1518 GUGUGGGAUGAGAUUUCGCUGGCGUUUGGGAACGCAUUUCCCUCCGUGAAAGAGAGGCUC 1577

Qy        1580 GTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTGAAGATCAAGATCCCAGATCTG 1639
                :|| ||||||| :: :    |:    |   | ||  :  |||:|| | : || ||:|:
Db        1578 UUGAACAGGAAACUUAUCAGAGUGGCAGGCGACGCAUUAGAGAUCAGGGUGCCUGAUCUA 1637

Qy        1640 TATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACCAAGTCTGAGGAGTTACCGCAT 1699
               :|:|: || :   | ||||| :: |:  |:|| :|||     :|:| |||  : ||
Db        1638 UAUGUGACCUUCCACGACAGAUUAGUGACUGAGUACAAGGCCUCUGUGGACAUGCCUGCG 1697

Qy        1700 CTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATGTACGACGCGTTATCAGAATTA 1759
               |: || |: | |||| |  : |||||| | ||    |:|:|| | ||  : :|||| ::|
Db        1698 CUUGACAUUAGGAAGAAGAUGGAAGAAACGGAAGUGAUGUACAAUGCACUUUCAGAGUUA 1757

Qy        1760 TCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAGTTCAAAGACATGTGCAAGGCT 1819
               :|  :  : | ||   |:|| || ::|||: : |     ::     | |:|:|| |  |:
Db        1758 UCGGUGUUAAGGGAGUCUGACAAAUUCGAUGUUGAUGUUUUUUCCCAGAUGUGCCAAUCU 1817

Qy        1820 TTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTTGCAGTGGCCGAGAATAGAAGC 1879
               :: || |::   ||      ||||||    |: |: |: || |:       ||:   |||
Db        1818 UUGGAAGUUGACCCAAUGACGGCAGCGAAGGUUAUAGUCGCGGUCAUGAGCAAUGAGAGC 1877

Qy        1880 GGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAATGTGGCTAAGGCTCT------T 1933
               ||: : ||:|: || :::||    || || |||| |||:|: ||    ||: :      :
Db        1878 GGUCUGACUCUCACAUUUGAACGACCUACUGAGGCGAAUGUUGCGCUAGCUUUACAGGAU 1937

Qy        1934 AAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCGACATCCGAAGAGGTGAACGTA 1993
                ||   | ||| :| || |  |   :     ::    | | |   |  || |
Db        1938 CAAGAGAAGGCUUCAGAAGGUGCUUUGGUAGUUACCUCAAGAGAAGUUGAAGAACCGUCC 1997

Qy        1994 AATAAATTTTCTATTGCTGAGAAAGGGAGATTGCCTGTGTGTGCAGAAAGTCATGGTTTG 2053
               |  ||   ::| |: ||      || |  |      |   |:   |   |  |:  :  |
Db        1998 AUGAAGGGUUCGAUGGCCAGAGGAGAGUUACAAUUAGCUGGUCUUGCUGGAGAUCAUCCG 2057

Qy        2054 ACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTCAACGATTTCCATAAGGCTTGC 2113
                 |    |  | :   || || ||||| : |||:|  :  |  | :: ||:| |||
Db        2058 GAGUCGUCCUAUUCUAAGAACGAGGAGAUAGAGUCUUUAGAGCAGUUUCAUAUGGCAACG 2117

Qy        2114 GTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTCTACACTGGCTCACTCAAAGTT 2173
               |  ||:    : |::   ||||| |:|   :|| ::|: :|||| ||  |  : ||||::
Db        2118 GCAGAUUCGUUAAUUCGUAAGCAGAUGAGCUCGAUUGUGUACACGGGUCCGAUUAAAGUU 2177

Qy        2174 CAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCGTTGTCCGCCACTGTATCAAAT 2233
               || ||||:||| |||: : : || ||  :|| ||| :|  : :| ||  | |: :| ||:
Db        2178 CAGCAAAUGAAAAACUUUAUCGAUAGCCUGGUAGCAUCACUAUCUGCUGCGGUGUCGAAU 2237
```

```
Qy    2234 CTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCTGATTCCAGGGAGAAAGTTGGT 2293
           |:   ||||   |: || ||:  ||  |    :||   :||  || |  | ||  ::||
Db    2238 CUCGUCAAGAUCCUCAAAGAUACAGCUGCUAUUGACCUUGAAACCCGUCAAAAGUUUGGA 2297

Qy    2294 GTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCTGCGGCCAAAGGTCATTCATGG 2353
           |: : |||:|:  | :  |  |||:|| :  :||||||  |||||||  |:||: ||:||
Db    2298 GUCUUGGAUGUUGCAUCUAGGAAGUGGUUAAUCAAACCAACGGCCAAGAGUCAUGCAUGG 2357

Qy    2354 GGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCACTTCTATCTTATGAAGGAGAT 2413
           || |::|:        ||  | ||||      :   || |:: :    :|:|| |   |
Db    2358 GGUGUUGUUGAAACCCACGCGAGGAAGUAUCAUGUGGCGCUUUUGGAAUAUGAUGAGCAG 2417

Qy    2414 AGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTATCATCTGATACAATGGTATAT 2473
            |  :||:|||       || :|||| || |: ||:|:    :|:||  |  : |: :|:
Db    2418 GGUGUGGUGACAUGCGAUGAUUGGAGAAGAGUAGCUGUCAGCUCUGAGUCUGUUGUUUAU 2477

Qy    2474 TCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATGAGAGACGGTGAACCCCACGAA 2533
           :| || |: || || |:|  || :|:| | | |    :  || |||| ||||| || |
Db    2478 UCCGACAUGGCGAAACUCAGAACUCUGCGCAGACUGCUUCGAAACGGAGAACCGCAUGUC 2537

Qy    2534 CCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGTTGTGGAAAGTACAAAGGAGAT 2593
             :|  |||||| : |: |::|:||| || |: || || :|:|| ||   ||||| |  :
Db    2538 AGUAGCGCAAAGGUUGUUCUUGUGGACGGAGUUCCGGGCUGUGGGAAAACCAAAGAAAUU 2597

Qy    2594 TTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTTCCTGGAAAACAAGCTGCTGCT 2653
            ::   ||  :: |: ::||:|| ||: : |: :: |: ||:|| || ||||| || |
Db    2598 CUUUCCAGGGUUAAUUUUGAUGAAGAUCUAAUUUUAGUACCUGGGAAGCAAGCCGCGGAA 2657

Qy    2654 ATGATCAGAAGAAGGGCTAATTCATCTGGACTGATAAGAGCCACAATGGACAATGTGAGA 2713
           |:||:||||||| | || ||::| :| ||  : |:    ||||| | |||||| |: | |
Db    2658 AUGAUCAGAAGACGUGCGAAUUCCUCAGGGAUUAUUGUGGCCACGAAGGACAACGUUAAA 2717

Qy    2714 ACGGTAGATTCACTTCTAATGCATCCAAAACCGCGATCAC---------ACAAGAGGCTT 2764
           || |: ||::|  :  : |:| |:          |  |||          ||||||| :
Db    2718 ACCGUUGAUUCUUUCAUGAUGAAUUUUGGAAAAGCACACGCUGUCAGUUCAAGAGGUUA 2777

Qy    2765 TTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTTAACTTCCTGGTGCTTATCTCT 2824
           :: |::||:||||||::||:| :||| || ||::|:|::|| :: |: |:|   |: :|
Db    2778 UUCAUUGAUGAAGGGUUGAUGUUGCAUACUGGUUGUGUUAAUUUUCUUGUGGCGAUGUCA 2837

Qy    2825 GGTTGCGACATCGCATACATTTACGGAGATACACAGCAGATTCCTTTCATTAACAGAGTT 2884
              :|||| |: ||: |  :::||||||| ||||||||||::|| : ||: || ||||::
Db    2838 UUGUGCGAAAUUGCAUAUGUUUACGGAGACACACAGCAGAUUCCAUACAUCAAUAGAGUU 2897

Qy    2885 CAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAAGTGGATGAAGTTGAGATGAGG 2944
                 ::||||:| |||   ||::::|  ||  :| |||: || || |: ||||   |
Db    2898 UCAGGAUUCCCGUACCCCGCCCAUUUUGCCAAAUUGGAAGUUGACGAGGUGGAGACACGC 2957

Qy    2945 AGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTCCTACAATCGAAGTACGAAGGA 3004
           || || || |:  | :| ||||  ||:|: |    ::  |:  |   ||  :| || ||
Db    2958 AGAACUACUCUCCGUUGUCCAGCCGAUGUCACACAUUAUCUGAACAGGAGAUAUGAGGGC 3017

Qy    3005 GCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCATCTGAGATGATAGGCGGTAAG 3064
              |: |  | |||::|  | |:  ||   :| |: :|    ||||:| : |||||
Db    3018 UUUGUCAUGAGCACUUCUUCGGUUAAAAAGUCUGUUUCGCAGGAGAUGGUCGGCGGAGCC 3077

Qy    3065 GGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGGAAAATTGTAACTTTCACTCAGGCT 3124
           |  |:  : ||     : :| |||||  :  | || || |:  : ||::: || ||  |
Db    3078 GCCGUGAUCAAUCCGAUCUCAAAACCCUUGCAUGGCAAGAUCCUGACUUUUACCCAAUCG 3137

Qy    3125 GATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTGAACACCGTTCATGAGATCCAA 3184
           ||:|||   |   :       |  || :|:    |:|:  |||| |: ||:||  : |||
Db    3138 GAUAAAGAAGCUCUGCUUUCAAGAGGGUAUUCAGAUGUUCACACUGUGCAUGAAGUGCAA 3197

Qy    3185 GGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACGGCAACTCCACTGACTCTGATT 3244
           || || || :     ||:|: :| |: |: || :: ||  | || ||| :  |  : |::
Db    3198 GGCGAGACAUACUCUGAUGUUUCACUAGUUAGGUUAACCCCUACACCAGUCUCCAUCAUU 3257

Qy    3245 TCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGACACACAAAGAGCTTCAAATAT 3304
            |         ||| ||:|:: : |:|||  :| | || |||||        :||| :|
Db    3258 GCAGGAGACAGCCCACAUGUUUUGGUCGCAUUGUCAAGGCACACCUGUUCGCUCAAGUAC 3317

Qy    3305 TACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGTGATTTGTCTTCTTTAAGCTCC 3364
```

```
           :|||| |: |:  : ||:||:::||:    |: |::|| ||: :        : |||:|
Db    3318 UACACUGUUGUUAUGGAUCCUUUAGUUAGUAUCAUUAGAGAUCUAGAGAAACUUAGCUCG 3377

Qy    3365 TTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGATAGCAATTACAGATGGATGCA 3424
           : | : ::||| |:|:|:| ||: || ||||| |    |:||||::||||| : ||  |
Db    3378 UACUUGUUAGAUAUGUAUAAGGUCGAUGCAGGAACACAAUAGCAAUUACAGAUUGACUCG 3437

Qy    3425 GTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAATCAGGAGACTTTCCAGATCTA 3484
           |:|::||||||:   ||:|: :::|: ||| | || ||  | || ||  :: | ||: :
Db    3438 GUGUUCAAAGGUUCCAAUCUUUUUGUUGCAGCGCCAAAGACUGGUGAUAUUUCUGAUAUG 3497

Qy    3485 CAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACTATACTTAACAAGTATGATGCT 3544
           |||:: :| :| ||:   :| |:||| || || || || |:  : || || : :||:||:
Db    3498 CAGUUUUACUAUGAUAAGUGUCUCCCAGGCAACAGCACCAUGAUGAAUAAUUUUGAUGCU 3557

Qy    3545 GTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAGGATTGTGTTCTTGATTTTTCC 3604
           |::||||:||||::   :|| | :    : ||:|: || ||::|  :  : ||: : :|
Db    3558 GUUACCAUGAGGUUGACUGACAUUUCAUUGAAUGUCAAAGAUUGCAUAUUGGAUAUGUCU 3617

Qy    3605 AAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTAGAGCCAGTTTTGCGTACCGCG 3664
           ||   : :: |   ||| |||||    |    |   |:|   ||  :  : || || |||
Db    3618 AAGUCUGUUGCUGCGCCUAAGGAUCAAAUCAAACCACUAAUACCUAUGGUACGAACGGCG 3677

Qy    3665 GCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTGGTTGCAATGATTAAAAGAAAT 3724
           || |||  |||| |     | ||||:| : |||||: : |: || |:||::||||| ||
Db    3678 GCAGAAAUGCCACGCCAGACUGGACUAUUGGAAAAUUUAGUGGCGAUGAUUAAAAGGAAC 3737

Qy    3725 TTCAACGCACCAGACCTGACGGGGACGATTGACATTGAGAGCACCGCATCTGTTGTAGTA 3784
           :: |||||||| ||  :| | || |  |::|| |::|| |  || |||:|: : |: |:|
Db    3738 UUUAACGCACCCGAGUUGUCUGGCAUCAUUGAUAUUGAAAAUACUGCAUCUUUAGUUGUA 3797

Qy    3785 GATAAGTTTTTTGATAGCTATTTTATTAAAAAAGAAAAATACACAAAAAATATTGCTGGA 3844
           ||:|||::::::||:|| :|:::  ::||| || ||| | |  |||| || | :| :
Db    3798 GAUAAGUUUUUUGAUAGUUAUUUGCUUAAAGAAAAAAGAAAACCAAAUAAAAAUGUUUCU 3857

Qy    3845 GTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAACAGGAAAGAAGTACTATTGGAC 3904
            :| : |  |  || :|  : |  |||:||:: |||||   |||  | |:|  | : | |
Db    3858 UUGUUCAGUAGAGAGUCUCUCAAUAGAUGGUUAGAAAAGCAGGAACAGGUAACAAUAGGC 3917

Qy    3905 GACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATCGATCAGTACAAGCACATGATC 3964
            |  : ||  | :   |::::  |||: :||| ||  : ||:||:|||   ||||:||:
Db    3918 CAGCUCGCAGAUUUUGAUUUUGUAGAUUUGCCAGCAGUUGAUCAGUACAGACACAUGAUU 3977

Qy    3965 AAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAGAATGAATACCCTGCTCTGCAA 4024
           || || ||||| || || |||::||||  ::|||: || |  || :|||| ||: :|||
Db    3978 AAAGCACAACCCAAGCAAAAAUUGGACACUUCAAUCCAAACGGAGUACCCGGCUUUGCAG 4037

Qy    4025 ACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTGGCCGGTTTCT---CAGAGCTT 4081
           || |::|: :||||::| ||  |||:||| |  |: :: | |   :: :     ||||::
Db    4038 ACGAUUGUGUACCAUUCAAAAAAGAUCAAUGCAAUAUUUGGCCCGUUGUUUAGUGAGCUU 4097

Qy    4082 ACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTTCTTTTCTTTACTAGGAAAACT 4141
           || |||    : |: ||     ::||::| |  |  ::: : :: :: || || || ||
Db    4098 ACUAGGCAAUUACUGGACAGUGUUGAUUCGAGCAGAUUUUUGUUUUUCACAAGAAAGACA 4157

Qy    4142 CCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCGCACGTTCCTATGGATGTGTTA 4201
           ||||  ||||:: | || :: ::|   ||:|:||||   ||  |: || |:|||:|: ::
Db    4158 CCAGCGCAGAUUGAGGAUUUCUUCGGAGAUCUCGACAGUCAUGUGCCGAUGGAUGUCUUG 4217

Qy    4202 GAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAGTTTCATTGTGCTGTAGAGTAT 4261
           || |:|||:|: :| || :| || || :| ||||| || :: || :|:|| |:||| :|
Db    4218 GAGCUGGAUAUAUCAAAAUACGACAAAUCUCAGAAUGAAUUCCACUGUGCAGUAGAAUAC 4277

Qy    4262 GAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCCGAAGTGTGGAAACAAGGGCAC 4321
           || |: :||  ||||::|||: :  | || :: ::||  ||||: :|||||||||||||
Db    4278 GAGAUCUGGCGAAGAUUGGGUUUUGAAGACUUCUUGGGAGAAGUUUGGAAACAAGGGCAU 4337

Qy    4322 AGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAGACATGTCTGTGGTATCAAAGG 4381
           || || || ||  : ||||::|  |  || || |: || || :|  : :||:|:|||||
Db    4338 AGAAAGACCACCCUCAAGGAUUAUACCGCAGGUAUAAAAACUUGCAUCUGGUAUCAAAGA 4397

Qy    4382 AAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTTATAATAGCAGCTTGCTTGGGT 4441
           || ||||| || |: || || ::||: || || |:|:  |: |: || || :| ::||
```

```
Db        4398 AAGAGCGGGGACGUCACGACGUUCAUUGGAAACACUGUGAUCAUUGCUGCAUGUUUGGCC 4457

Qy        4442 TCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTTTGTGGAGACGATTCCGTTTTG 4501
               :| |:| : ||||:||| ||  : |: ||||| || ::::| || |||||:    :  :|
Db        4458 UCGAUGCUUCCGAUGGAGAAAAUAAUCAAAGGAGCCUUUUGCGGUGACGAUAGUCUGCUG 4517

Qy        4502 TATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCATGTGCTAATCTCATGTGGAAT 4561
               :| :::||||||||::  || :: || ||  : ||    :  || ||:|: |:|:||||:
Db        4518 UACUUUCCAAAGGGUUGUGAGUUUCCGGAUGUGCAACACUCCGCGAAUCUUAUGUGGAAU 4577

Qy        4562 TTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTTTGTGGTAGATACATCATACAC 4621
               :::|| || ||||:|: :| |||   |:| || :||::::| || |||:|  : |:|||
Db        4578 UUUGAAGCAAAACUGUUUAAAAAACAGUAUGGAUACUUUUGCGGAAGAUAUGUAAUACAU 4637

Qy        4622 CATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAGTTGATCTCCAAACTTGGGGCA 4681
               || || |  |||   |: |:|:|::| ||:||  : |||::||:|:| ||||::|| ||
Db        4638 CACGACAGAGGAUGCAUUGUGUAUUACGAUCCCCUAAAGUUGAUCUCGAAACUUGGUGCU 4697

Qy        4682 AAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGGGTGTCTTTGTGCGATGTTGCT 4741
               ||||| |:||||||::  || |||:: || |||:: ||   |:|: : :| ||:|::||:
Db        4698 AAACACAUCAAGGAUUGGGAACACUUGGAGGAGUUCAGAAGGUCUCUUUGUGAUGUUGCU 4757

Qy        4742 TGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTGAACGCAGCTATCAAGGAGGTT 4801
                 ::|| :    || :|    :    |    | ||| :| |||  ||: :   |||||::
Db        4758 GUUUCGUUGAACAAUUGUGCGUAUUAC---ACACAGUUGGACGACGCUGUAUGGGAGGUU 4814

Qy        4802 CATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGTGTTAACAAATTTTTGTGTGAT 4861
               ||:|| |||||   :   ||::||:::| :: :||  |: :    || : :::|: :||:
Db        4815 CAUAAGACCGCCCCUCCAGGUUCGUUUGUUUAUAAAAGUCUGGUGAAGUAUUUGUCUGAU 4874

Qy        4862 AAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAGTCTCAGAGATACTGTCAAAAT 4921
               ||| :: : :::|||| :::|::: :| |:|||: :   : : | ||  |  |: || |:
Db        4875 AAAGUUCUUUUUAGAAGUUUGUUUAUAGAUGGCUCUAGUUGUUAAAGGAAAAGUGAAUAU 4934

Qy        4922 TAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACTTCCGGCATTCATGACTAAGGT 4981
                |  |||:: |: || |:  | |||  |||  |||:  : ||| |  :  : ||    |:
Db        4935 CAAUGAGUUUAUCGACCUGACAAAAAUGGAGAAGAUCUUACCGUCGAUGUUUACCCCUGU 4994

Qy        4982 CAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGCTGTTAAGAATGATAGTCTTTC 5041
                |||||:|::|     :| |  |: || || |: |:|| :  : ||||:||     : :|
Db        4995 AAAGAGUGUUAUGUGUUCCAAAGUUGAUAAAAUAAUGGUUCAUGAGAAUGAGUCAUUGUC 5054

Qy        5042 TGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAAAGGGTATGTGTGCTTAGCTGA 5101
                || |:  |  : |::||||| |::||| :  :: | |  || :| |: :| ::||| |
Db        5055 AGAGGUGAACCUUCUUAAAGGAGUUAAGCUUAUUGAUAGUGGAUACGUCUGUUUAGCCGG 5114

Qy        5102 TTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTGCCGTGGTGGTGTCAGTGTTTG 5161
               :::||: |:  | || |||:||||  : || || || :|| | || ||:|: || |: :|
Db        5115 UUUGGUCGUCACGGGCGAGUGGAACUUGCCUGACAAUUGCAGAGGAGGUGUGAGCGUGUG 5174

Qy        5162 TATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAACGCTGGGTGCGTATCACGCCCC 5221
               : : |: || || || |:| ||||     | || || || |: ||  | :|  || |  |
Db        5175 UCUGGUGGACAAAAGGAUGGAAAGAGCCGACGAGGCCACUCUCGGAUCUUACUACACAGC 5234

Qy        5222 TGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAATTATTCAATAACATCCGAGGA 5281
                ||:   || || |  :::   :: ||| :  : || ||::|: | |:||  || ||||
Db        5235 AGCUGCAAAGAAAAGAUUUCAGUUCAAGGUCGUUCCCAAUUAUGCUAUAACCACCCAGGA 5294

Qy        5282 TGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAAAGGAGTGGCTATGGAAGAAGG 5341
                ||   |||  ||   :||||||: ::||: ||:|: | |   |:|   |:|  ||  ||
Db        5295 CGCGAUGAAAAACGUCUGGCAAGUUUUAGUUAAUAUUAGAAAUGUGAAGAUGUCAGCGGG 5354

Qy        5342 ATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGTAGTACATAAAAATAATGTAAG 5401
                : |:|:||  : :|: :||||:: |: :|  : :|: : |:  |:| ||||:||: :||
Db        5355 UUUCUGUCCGCUUUCUCUGGAGUUUGUGUCGGUGUGUAUUGUUUAUAGAAAUAAUAUAAA 5414

Qy        5402 AAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGGCTCGCCAATTGAACTCACTGA 5461
               |  |||:::||| ||    |::   |  |:|| ||||||   ||| |: ||||: || ||
Db        5415 AUUAGGUUUGAGAGAGAAGAUUACAAACGUGAGAGACGGAGGGCCCAUGGAACUUACAGA 5474

Qy        5462 AAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGCTGTGAAACTCGAAAAGGTTCC 5521
               | | |: |::|| |||::| :||| || |: || |:| |  : |  |: | |||| ::|
Db        5475 AGAAGUCGUUGAUGAGUUCAUGGAAGAUGUCCCUAUGUCGAUCAGGCUUGCAAAGUUUCG 5534

Qy        5522 GG------------AAAACAAAAAAGAAATGGTAGGTAATAATGTTAATAAT-------- 5561
                             |||| |   | |       ||| || ||:  :| :||:
Db        5535 AUCUCGAACCGGAAAAAAGAGUGAUGUCCGCAAAGGGAAAAAUAGUAGUAAUGAUCGGUC 5594

Qy        5562 -------AAGAAAATAAATAACAGTGGTAAGAAGGGTTTTAAAATTGAGGAAATTGAGGA 5614
                      || || |   |:|  | :| :||| |   :     ||:       |   || |
Db        5595 AGUGCCGAACAAGAACUAUAGAAAUGUUAAGGAUUUUGGAGGAAUGAGUUUUAAAAAGAA 5654

Qy        5615 TAATGTAAGTGATGACGAGT---------CTATCGCGTCATCGAGTACGTTTTAATCAAT 5665
               :||: :||  ||:|| || :         |: :|||   |:||  : ||::::|   ||:
Db        5655 UAAUUUAAUCGAUGAUGAUUCGGAGGCUACUGUCGCCGAAUCGGAUUCGUUUUA---AAU 5711

Qy        5666 ATGCCTTATACAATCAACTCTCCGAGCCAATTTGTTTACTTATCTTCCGCTTACGCAGAT 5725
               |:| |::| |  |:||   |:||    || :: |: : |:: :| :| ||  :  || ||
Db        5712 AUGUCUUACAGUAUCACUACUCCAUCUCAGUUCGUGUUCUUGUCAUCAGCGUGGGCCGAC 5771

Qy        5726 CCTGTGCAGCTGATCAATCTGTGTACAAATGCATTGGGTAACCAGTTTCAAACGCAACAA 5785
               ||  :  || : |: ||: : :|:|| ||:|| :: || || |||:::||||| ||||||
Db        5772 CCAAUAGAGUUAAUUAAUUUAUGUACUAAUGCCUUAGGAAAUCAGUUUCAAACACAACAA 5831

Qy        5786 GCTAGGACAACAGTCCAACAGCAATTTGCGGATGCCTGGAAACCTGTGCCTAGTATGACA 5845
               ||: | ||    |: |||   |||::    || |  :|||||||:   ||     : ||
Db        5832 GCUCGAACUGUCGUUCAAAGACAAUUCAGUGAGGUGUGGAAACCUUCACCACAAGUAACU 5891

Qy        5846 GTGAGATTTCCTGCATCGGATTTCTATGTGTATAGATATAATTCGACGCTTGATCCGTTG 5905
               |: || :: ||:|     ||  ::  | |:|:| || :| ||: ||    : || ||| :
Db        5892 GUUAGGUUCCCUGACAGUGACUUUAAGGUGUACAGGUACAAUGCGGUAUUAGACCCGCUA 5951

Qy        5906 ATCACGGCGTTATTAAATAGCTTTGATACTAGAAATAGAATAATAGAGGTTGATAATCAA 5965
                :||| ||  : ::|  :    :: || ||:|||||:||||:||:||| |::|| ||:||
Db        5952 GUCACAGCACUGUUAGGUGCAUUCGACACUAGAAAUAGAAUAAUAGAAGUUGAAAAUCAG 6011

Qy        5966 CCCGCACCGAATACTACTGAAATCGTTAACGCGACTCAGAGGGTAGACGATGCTACTGTA 6025
                |    || |  ||: | ||||   :  |  || ||:|  || |:|||||| || || |:
Db        6012 GCGAACCCCACGACUGCCGAAACGUUAGAUGCUACUCGUAGAGUAGACGACGCAACGGUG 6071

Qy        6026 GCTATAAGGGCTTCAATCAATAATTTGGCTAATGAACTGGTTCGTGGAACTGGCATGTTC 6085
               || |:||||    | |: ||:||:::       ||| :| :  | ||||| ||    :
Db        6072 GCCAUAAGGAGCGCGAUAAAUAAUUUAAUAGUAGAAUUGAUCAGAGGAACCGGAUCUUAU 6131

Qy        6086 AATCAAGCAGGCTTTGAGACTGCTAGTGGACTTGTCTGGACCACAACTCCGGCTACTTAG 6145
               ||:|        :: ||||   |:  :||  : |: :||||  |    |||||  | :||
Db        6132 AAUCGGAGCUCUUUCGAGAGCUCUUCUGGUUUGGUUUGGACGUCUGGGCCGGCAUCAUAG 6191

Qy        6146 CTATTGTTG 6154
               | |::  :|
Db        6192 CAAUUAAUG 6200

RESULT 10
US-10-828-029-5
; Sequence 5, Application US/10828029
; Publication No. US20040171813A1
;   GENERAL INFORMATION:
;         APPLICANT: GARGER, STEPHEN
;                    HOLTZ, R. BARRY
;                    McCULLOCH, MICHAEL
;                    TURPEN, THOMAS
;         TITLE OF INVENTION: A PROCESS FOR ISOLATING AND
;                             PURIFYING VIRUSES SOLUBLE PROTEINS AND PEPTIDES
;                             FROM PLANT SOURCES
;         NUMBER OF SEQUENCES: 5
;         CORRESPONDENCE ADDRESS:
;              ADDRESSEE: Howrey & Simon
;              STREET: 1299 Pennsylvania Avenue N.W.
;              CITY: Washington
;              STATE: DC
;              COUNTRY: USA
;              ZIP: 20004
;         COMPUTER READABLE FORM:
;              MEDIUM TYPE: Diskette
;              COMPUTER: IBM Compatible
```

```
;                OPERATING SYSTEM: DOS
;                SOFTWARE: FastSEQ for Windows Version 2.0
;           CURRENT APPLICATION DATA:
;                APPLICATION NUMBER: US/10/828,029
;                FILING DATE: 20-Apr-2004
;                CLASSIFICATION: <Unknown>
;           PRIOR APPLICATION DATA:
;                APPLICATION NUMBER: US/09/962,527
;                FILING DATE: 24-Sep-2001
;                APPLICATION NUMBER: 09/037,751
;                FILING DATE: 10-march-1998
;           ATTORNEY/AGENT INFORMATION:
;                NAME: Halluin, Albert P
;                REGISTRATION NUMBER: 25,277
;                REFERENCE/DOCKET NUMBER: 00801.0140.999
;           TELECOMMUNICATION INFORMATION:
;                TELEPHONE: 650-463-8109
;                TELEFAX: 650-463-8400
;                TELEX: <Unknown>
;       INFORMATION FOR SEQ ID NO: 5:
;           SEQUENCE CHARACTERISTICS:
;                LENGTH: 6446 base pairs
;                TYPE: nucleic acid
;                STRANDEDNESS: single
;                TOPOLOGY: unknown
;           MOLECULE TYPE: Genomic RNA
;           SEQUENCE DESCRIPTION: SEQ ID NO: 5:
US-10-828-029-5

  Query Match             38.5%;  Score 2449.8;  DB 19;  Length 6446;
  Best Local Similarity   44.8%;  Pred. No. 0;
  Matches 2771;  Conservative 1146;  Mismatches 2212;  Indels   60;  Gaps    8;

Qy          20 ACAACAACAATTAAAACAAAAACAACATATTACAAACAACAAACAACAACAATGGCACAC 79
               || |  |  |  |||  | ||||||||:   |   || |   ||||  ||||:|||| ||
Db          18 ACCAACAACAACAAACAACAAACAACAUUACAAUUACUAUUUACAAUUACAAUGGCAUAC 77

Qy          80 ATACAATCTATAATTAGCAACGCCCTTCTTGAAAGCGTGAGTGGTAAAAACACTCTCGTT 139
               | |||  |    |  |     ||  : |: || |  |:  | || || ||| |  : |:
Db          78 ACACAGACAGCUACCACAUCAGCUUUGCUGGACACUGUCCGAGGAAACAACUCCUUGGUC 137

Qy         140 AATGACCTTGCAAGAAGGCGCATGTACGATACGGCCGTGGAAGAATTTAACGCCCGCGAC 199
               ||:|| |: ||||   | ||  : :|||| || || |: ||||| :::||||| || |||
Db         138 AAUGAUCUAGCAAAGCGUCGUCUUUACGACACAGCGGUUGAAGAGUUUAACGCUCGUGAC 197

Qy         200 CGTAGACCAAAGGTCAACTTTTCCAAAACTATTAGCGAAGAGCAAACGCTTCTAGTCTCC 259
               || || || ||||: |||::::| |||   |: ||||| ||||| ||||:: : |   ||
Db         198 CGCAGGCCCAAGGUGAACUUUUCAAAAGUAAUAAGCGAGGAGCAGACGCUUAUUGCUACC 257

Qy         260 AACGCGTACCCGGAGTTCCAGATTACCTTTTATAATACTCAAAATGCCGTACACAGTTTG 319
                  |||:| || || ::||| |::|| ::::|:|| || |||||:||||: ||     :
Db         258 CGGGCGUAUCCAGAAUUCCAAAUUACAUUUUAUAACACGCAAAAUGCCGUGCAUUCGCUU 317

Qy         320 GCTGGAGGTTTGAGAGCATTAGAATTGGAATATCTGATGCTACAAGTTCCCTATGGATCG 379
               || || || ::| || | ::|||| :||||:|:|:||:| : ||| ::|||:| |||:|
Db         318 GCAGGUGGAUUGCGAUCUUUAGAACUGGAAUAUCUGAUGAUGCAAAUUCCCUACGGAUCA 377

Qy         380 CCGACATATGATATAGGTGGGAACTTTGCAGCACATTTGTTCAAAGGCAGGGATTACGTG 439
                 ||| :|:|| |:||| ||||| :::||| | ||: :|::||| ||  | |  :| |:
Db         378 UUGACUUAUGACAUAGGCGGGAAUUUUGCAUCGCAUCUGUUCAAGGGACGAGCAUAUGUA 437

Qy         440 CATTGCTGTATGCCCAATCTGGACATACGAGATATAATGAGGCACGAAGGACAAAAGGAC 499
               || :||:| |:|||||| |:|||| : |||||| |: |:| |||||||||| || || |||
Db         438 CACUGCUGCAUGCCCAACCUGGACGUUCGAGACAUCAUGCGGCACGAAGGCCAGAAAGAC 497

Qy         500 TCAATTGAGATGTATTTGTCCAGATTGTCTCGTTCTAACAAGGTAATTCCTGAGTTTCAA 559
                  |::||  : :|  : :| ||  :     |       ||   | : ||  | :: |||
Db         498 AGUAUUGAACUAUACCUUUCUAGGCUAGAGAGAGGGGGGAAAACAGUCCCCAACUUCCAA 557

Qy         560 AGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAAGTCTGCTGCTCTAAAACTTTT 619
               | ||| || ::: |||| :| ||||||  :||  | || |    |:|    || |||:::
Db         558 AAGGAAGCAUUUGACAGAUACGCAGAAAUUCCUGAAGACGCUGUCUGUCACAAUACUUUC 617

Qy         620 CAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGAAGATACGCTGTTGCTCTGCAC 679
               |||      |||   || |||    || |    || |||   :| ||  ::|| |: |||
Db         618 CAGACAAUGCGACAUCAGCCGAUGCAGCAAUCAGGCAGAGUGUAUGCCAUUGCGCUACAC 677

Qy         680 AGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCGTTAATATCTAAGAATATACAT 739
               ||  : :|:|| |: || |   |:|||:: || || ||  :  :    || ||: : ||:
Db         678 AGCAUAUAUGACAUACCAGCCGAUGAGUUCGGGGCGGCACUCUUGAGGAAAAAUGUCCAU 737

Qy         740 GTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTACTAGACCAGACGGAGGTTACG 799
                  :| :|:|| ||:: |   ::  | ||     :  : |: ||  |  |  | |: |
Db         738 ACGUGCUAUGCCGCUUUCCACUUCUCUGAGAACCUGCUUCUUGAAGAUUCAUACGUCAAU 797

Qy         800 CTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGATGATGTTTCTTTTTTCTTTGCT 859
                :  | ||||:   |||   :::     | || || ||  |  :  | ::::  :::||
Db         798 UUGGACGAAAUCAACGCGUGUUUUUCGCGCGAUGGAGACAAGUUGACCUUUUCUUUUGCA 857

Qy         860 GATGAAAGTACTTTAAATTATAGTCATAAATACAAAAATATCTTGCATTATGTAGTTAAA 919
                  || ||:||: : ||::|: |:||:|  :|    ||:|:  :  | :|:|:    |||
Db         858 UCAGAGAGUACUCUUAAUUAUUGUCAUAGUUAUUCUAAUAUUCUUAAGUAUGUGUGCAAA 917

Qy         920 TCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAGGAATTTTTAGTCACTAGGGTT 979
                |::||:: || || :|:| :|||   |:::|| : ||||| :::::||:||| || |::
Db         918 ACUUACUUCCCGGCCUCUAAUAGAGAGGUUUACAUGAAGGAGUUUUUAGUCACCAGAGUU 977

Qy         980 AATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTATATTCTGTACAAGAGTGTTAGA 1039
               ||:|| :||::::|:|| ::: | | | :|||:|| : : :: :|:||||  |:|:
Db         978 AAUACCUGGUUUUGUAAGUUUUCUAGAAUAGAUACUUUUCUUUUGUACAAAGGUGUGGCC 1037

Qy        1040 CAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATGGAAGACGCCTTTGCTTACAAG 1099
               ||   | |    ||:||:|| |||:: :|:   || |:||||||||| :    ::||||
Db        1038 CAUAAAAGUGUAGAUAGUGAGCAGUUUUAUACUGCAAUGGAAGACGCAUGGCAUUACAAA 1097

Qy        1100 AAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTTAGAGACACGGCTTCGGTTAAC 1159
               || ||  : || |:|: |||||  || |||    :| ::   || ||  | :| |: ||
Db        1098 AAGACUCUUGCAAUGUGCAACAGCGAGAGAAUCCUCCUUGAGGAUUCAUCAUCAGUCAAU 1157

Qy        1160 TTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCGCTGTTTGAGGGTTCTATTACC 1219
               :  :||:: || || |:|| ||| |:||: |: |:|||  : :: ||   ::|: :
Db        1158 UACUGGUUUCCCAAAAUGAGGGAUAUGGUCAUCGUACCAUUAUUCGACAUUUCUUUGGAG 1217

Qy        1220 AGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGTGACTTCGTTTACACAGTGCTT 1279
               |  |  |||| |||  | |  || |:| : |:       || ::||: :  ||||:||::
Db        1218 ACUAGUAAGAGGACGCGCAAGGAAGUCUUAGUGUCCAAGGAUUUCGUGUUUACAGUGCUU 1277

Qy        1280 AATCATATCAGAACATATCAAGCCAAAGCGTTAACTTACCAGAACGTATTATCTTTCGTG 1339
               || || |:  |||||:| || || |||||  : || :||   || |: :: :| :: |:
Db        1278 AACCACAUUCGAACAUACCAGGCGAAAGCUCUUACAUACGCAAAUGUUUUGUCCUUUGUC 1337

Qy        1340 GAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACTGCTAGGTCTGAATGGGATGTA 1399
               || :| |:  ||:|  | |: |: |: || ||:|: || || |||:| |||:||||:|:
Db        1338 GAAUCGAUUCGAUCGAGGGUAAUCAUUAACGGUGUGACAGCGAGGUCCGAAUGGGAUGUG 1397

Qy        1400 GATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTCTTGCAGACTAAGCTGGCTGCG 1459
               || ||| |  :  : ||| ||::|:| |:||| :: : | :||| ||:||||: || |
Db        1398 GACAAAUCUUUGUUACAAUCCUUGUCCAUGACGUUUUACCUGCAUACUAAGCUUGCCGUU 1457

Qy        1460 CTTCAAGACGATATAGTAATGGGAAAGTTTCGGTGCTTGGATAAGACCACTTCTGAACTT 1519
               |:  | || ||  :| : |:  | |||::: |   |      || ||    :   | | :
Db        1458 CUAAAGGAUGACUUACUGAUUAGCAAGUUUAGUCUCGGUUCGAAAACGGUGUGCCAGCAU 1517

Qy        1520 ATTTGGGATGAGGTGGGCAAATTTTTTGGAAACGTTTTCCCCACTATCAAAGAGAGATTG 1579
                : :||||:||| :          :::|| ||||  :: ||| |  : ||||||||  :
Db        1518 GUGUGGGAUGAGAUUUCGCUGGCGUUUGGGAACGCAUUUCCCUCCGUGAAAGAGAGGCUC 1577

Qy        1580 GTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTGAAGATCAAGATCCCAGATCTG 1639
                :|| ||||||| :: :    |:    |   | ||  :  |||:|| | : || ||:|:
Db        1578 UUGAACAGGAAACUUAUCAGAGUGGCAGGCGACGCAUUAGAGAUCAGGGUGCCUGAUCUA 1637

Qy        1640 TATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACCAAGTCTGAGGAGTTACCGCAT 1699
               :|:|: || :   | ||||| :: |: ||:|| :|||     :|:| |||  : ||
Db        1638 UAUGUGACCUUCCACGACAGAUUAGUGACUGAGUACAAGGCCUCUGUGGACAUGCCUGCG 1697

Qy        1700 CTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATGTACGACGCGTTATCAGAATTA 1759
```

```
          |: || |: | |||| |  : |||||| | ||    |:|:|| | ||  : :|||| ::|
Db   1698 CUUGACAUUAGGAAGAAGAUGGAAGAAACGGAAGUGAUGUACAAUGCACUUUCAGAGUUA 1757

Qy   1760 TCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAGTTCAAAGACATGTGCAAGGCT 1819
          :|  :  : | ||   |:|| || ::|||: : |     ::     | |:|:|| |  |:
Db   1758 UCGGUGUUAAGGGAGUCUGACAAAUUCGAUGUUGAUGUUUUUUCCCAGAUGUGCCAAUCU 1817

Qy   1820 TTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTTGCAGTGGCCGAGAATAGAAGC 1879
          :: || |::   ||      ||||||    |: |: |: || |:       ||:   |||
Db   1818 UUGGAAGUUGACCCAAUGACGGCAGCGAAGGUUAUAGUCGCGGUCAUGAGCAAUGAGAGC 1877

Qy   1880 GGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAATGTGGCTAAGGCTCT------T 1933
          ||: : ||:|: || :::||    || || |||| ||:|:| ||     ||: :      :
Db   1878 GGUCUGACUCUCACAUUUGAACGACCUACUGAGGCGAAUGUUGCGCUAGCUUUACAGGAU 1937

Qy   1934 AAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCGACATCCGAAGAGGTGAACGTA 1993
           ||   | ||| :| || |  |   :     ::    | |   |  || |
Db   1938 CAAGAGAAGGCUUCAGAAGGUGCUUUGGUAGUUACCUCAAGAGAAGUUGAAGAACCGUCC 1997

Qy   1994 AATAAATTTTCTATTGCTGAGAAAGGGAGATTGCCTGTGTGTGCAGAAAGTCATGGTTTG 2053
          |  ||   ::| |: ||      || |  |      |   |:   |   |  |:  :  |
Db   1998 AUGAAGGGUUCGAUGGCCAGAGGAGAGUUACAAUUAGCUGGUCUUGCUGGAGAUCAUCCG 2057

Qy   2054 ACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTCAACGATTTCCATAAGGCTTGC 2113
            |    |  | :   || | ||||| : |||:|  :  |  | :: ||:| |||
Db   2058 GAGUCGUCCUAUUCUAAGAACGAGGAGAUAGAGUCUUUAGAGCAGUUUCAUAUGGCAACG 2117

Qy   2114 GTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTCTACACTGGCTCACTCAAAGTT 2173
          |  ||:    : |::   ||||| |:|   :|| ::|: :|||| ||  |  : ||||::
Db   2118 GCAGAUUCGUUAAUUCGUAAGCAGAUGAGCUCGAUUGUGUACACGGGUCCGAUUAAAGUU 2177

Qy   2174 CAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCGTTGTCCGCCACTGTATCAAAT 2233
          || ||||:||| |||: : : || ||  :|| ||| :|  : :| ||  | |: :| ||:
Db   2178 CAGCAAAUGAAAAACUUUAUCGAUAGCCUGGUAGCAUCACUAUCUGCUGCGGUGUCGAAU 2237

Qy   2234 CTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCTGATTCCAGGGAGAAAGTTGGT 2293
          |:   ||||   |: || ||:  ||  |    :||   :||  || |  | ||  ::||
Db   2238 CUCGUCAAGAUCCUCAAAGAUACAGCUGCUAUUGACCUUGAAACCCGUCAAAAGUUUGGA 2297

Qy   2294 GTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCTGCGGCCAAAGGTCATTCATGG 2353
          |: : |||:|:  | :  |  ||||:|| :  :||||||  |||||||  |:||: ||:||
Db   2298 GUCUUGGAUGUUGCAUCUAGGAAGUGGUUAAUCAAACCAACGGCCAAGAGUCAUGCAUGG 2357

Qy   2354 GGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCACTTCTATCTTATGAAGGAGAT 2413
          || |::|:        ||  | ||||      :   |||::  :    :|:|| |   |
Db   2358 GGUGUUGUUGAAACCCACGCGAGGAAGUAUCAUGUGGCGCUUUUGGAAUAUGAUGAGCAG 2417

Qy   2414 AGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTATCATCTGATACAATGGTATAT 2473
           |  :||:|||       || :|||| || |: ||:|:    :|:||  |  : |: :|:
Db   2418 GGUGUGGUGACAUGCGAUGAUUGGAGAAGAGUAGCUGUCAGCUCUGAGUCUGUUGUUUAU 2477

Qy   2474 TCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATGAGAGACGGTGAACCCCACGAA 2533
          :| || |: || || |:|  || :|:| | |    :  || |||| ||||| || |
Db   2478 UCCGACAUGGCGAAACUCAGAACUCUGCGCAGACUGCUUCGAAACGGAGAACCGCAUGUC 2537

Qy   2534 CCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGTTGTGGAAAGTACAAAGGAGAT 2593
            :|  |||||| : |: |::|:||| || |: || || :|:|| ||   ||||| |  :
Db   2538 AGUAGCGCAAAGGUUGUUCUUGUGGACGGAGUUCCGGGCUGUGGGAAAACCAAAGAAAUU 2597

Qy   2594 TTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTTCCTGGAAAACAAGCTGCTGCT 2653
           ::   ||  :: |: ::||:|| ||: : |: :: |: ||:|| || ||||| || |
Db   2598 CUUUCCAGGGUUAAUUUUGAUGAAGAUCUAAUUUUAGUACCUGGGAAGCAAGCCGCGGAA 2657

Qy   2654 ATGATCAGAAGAAGGGCTAATTCATCTGGACTGATAAGAGCCACAATGGACAATGTGAGA 2713
          |:||:|||||||| | || ||::| :| ||  : |:    |||| | |||||| |: | |
Db   2658 AUGAUCAGAAGACGUGCGAAUUCCUCAGGGAUUAUUGUGGCCACGAAGGACAACGUUAAA 2717

Qy   2714 ACGGTAGATTCACTTCTAATGCATCCAAAACCGCGATCAC---------ACAAGAGGCTT 2764
          || |: ||::|  :  : |:| |:          |  |||          ||||||| :
Db   2718 ACCGUUGAUUCUUUCAUGAUGAAUUUUGGGAAAAGCACACGCUGUCAGUUCAAGAGGUUA 2777

Qy   2765 TTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTTAACTTCCTGGTGCTTATCTCT 2824
          :: |::||:||||||::||:| :||| || ||::|:|::|| :: |: |:|   |: :|
Db   2778 UUCAUUGAUGAAGGGUUGAUGUUGCAUACUGGUUGUGUUAAUUUUCUUGUGGCGAUGUCA 2837

Qy   2825 GGTTGCGACATCGCATACATTTACGGAGATACACAGCAGATTCCTTTCATTAACAGAGTT 2884
             :|||| |: ||:|   :::||||||| ||||||||||::|| : ||: || ||||::
Db   2838 UUGUGCGAAAUUGCAUAUGUUUACGGAGACACACAGCAGAUUCCAUACAUCAAUAGAGUU 2897

Qy   2885 CAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAAGTGGATGAAGTTGAGATGAGG 2944
                ::||||:| |||   ||::::|  ||  :| |||: || || |: ||||   |
Db   2898 UCAGGAUUCCCGUACCCCGCCCAUUUUGCCAAAUUGGAAGUUGACGAGGUGGAGACACGC 2957

Qy   2945 AGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTCCTACAATCGAAGTACGAAGGA 3004
          || || || |:  | :| ||||  ||:|:|    ::  |:  |   ||  :| || ||
Db   2958 AGAACUACUCUCCGUUGUCCAGCCGAUGUCACACAUUAUCUGAACAGGAGAUAUGAGGGC 3017

Qy   3005 GCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCATCTGAGATGATAGGCGGTAAG 3064
             |: |  | |||::|  | |:  ||   :| |: :|    ||||:| : |||||
Db   3018 UUUGUCAUGAGCACUUCUUCGGUUAAAAAGUCUGUUUCGCAGGAGAUGGUCGGCGGAGCC 3077

Qy   3065 GGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGGAAAATTGTAACTTTCACTCAGGCT 3124
          |  |:  : ||     : :| |||||  :  | || || |:  : ||::: || ||   |
Db   3078 GCCGUGAUCAAUCCGAUCUCAAAACCCUUGCAUGGCAAGAUCCUGACUUUUACCCAAUCG 3137

Qy   3125 GATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTGAACACCGTTCATGAGATCCAA 3184
          ||:|||   |   :       |  || :|:    |:|:  |||| |: ||:||  : |||
Db   3138 GAUAAAGAAGCUCUGCUUUCAAGAGGGUAUUCAGAUGUUCACACUGUGCAUGAAGUGCAA 3197

Qy   3185 GGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACGGCAACTCCACTGACTCTGATT 3244
          || || || :     ||:|: :| |: |: || :: ||  | || ||| :  |  : |::
Db   3198 GGCGAGACAUACUCUGAUGUUUCACUAGUUAGGUUAACCCCUACACCAGUCUCCAUCAUU 3257

Qy   3245 TCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGACACACAAAGAGCTTCAAATAT 3304
           |         ||| ||:|:: : |:|||  :| | || |||||        :||| :|
Db   3258 GCAGGAGACAGCCCACAUGUUUUGGUCGCAUUGUCAAGGCACACCUGUUCGCUCAAGUAC 3317

Qy   3305 TACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGTGATTTGTCTTCTTTAAGCTCC 3364
          :|||| |: |:  : ||:||:::||:    |: |::|| ||: :        : |||:|
Db   3318 UACACUGUUGUUAUGGAUCCUUUAGUUAGUAUCAUUAGAGAUCUAGAGAAACUUAGCUCG 3377

Qy   3365 TTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGATAGCAATTACAGATGGATGCA 3424
          : | : ::||| |:|:|:|:| ||: || |||||    |:|||||::|||||: ||   |
Db   3378 UACUUGUUAGAUAUGUAUAAGGUCGAUGCAGGAACACAAUAGCAAUUACAGAUUGACUCG 3437

Qy   3425 GTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAATCAGGAGACTTTCCAGATCTA 3484
          |:|::||||||:   ||:|: :::|: ||| | || ||  | || ||  :: | ||: :
Db   3438 GUGUUCAAAGGUUCCAAUCUUUUUGUUGCAGCGCCAAAGACUGGUGAUAUUUCUGAUAUG 3497

Qy   3485 CAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACTATACTTAACAAGTATGATGCT 3544
          |||:: :| :| ||:   :| |:||| || || || || |:  : || ||  : :||:||:
Db   3498 CAGUUUUACUAUGAUAAGUGUCUCCCAGGCAACAGCACCAUGAUGAAUAAUUUUGAUGCU 3557

Qy   3545 GTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAGGATTGTGTTCTTGATTTTTCC 3604
          |::||||:||||::   :|| | :    : ||:|: || ||::|  :  : ||: : :|
Db   3558 GUUACCAUGAGGUUGACUGACAUUUCAUUGAAUGUCAAAGAUUGCAUAUUGGAUAUGUCU 3617

Qy   3605 AAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTAGAGCCAGTTTTGCGTACCGCG 3664
          ||   : :: |   ||| |||||    |   |:|   ||  :  : || || |||
Db   3618 AAGUCUGUUGCUGCGCCUAAGGAUCAAAUCAAACCACUAAUACCUAUGGUACGAACGGCG 3677

Qy   3665 GCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTGGTTGCAATGATTAAAAGAAAT 3724
          || |||  |||| |     | ||||:| : |||||: : |: || |:||::|||||:||
Db   3678 GCAGAAAUGCCACGCCAGACUGGACUAUUGGAAAAUUUAGUGGCGAUGAUUAAAAGGAAC 3737

Qy   3725 TTCAACGCACCAGACCTGACGGGGACGATTGACATTGAGAGCACCGCATCTGTTGTAGTA 3784
          :: ||||||||| ||  :| | || |  |::|| |::|| |  || |||:|: : |: |:|
Db   3738 UUUAACGCACCCGAGUUGUCUGGCAUCAUUGAUAUUGAAAAUACUGCAUCUUUAGUUGUA 3797

Qy   3785 GATAAGTTTTTTGATAGCTATTTTATTAAAAAAGAAAAATACACAAAAAATATTGCTGGA 3844
          ||:|||::::::||:|| :|:::  ::||| || ||| | |  |||| || | :| :
Db   3798 GAUAAGUUUUUUGAUAGUUAUUUGCUUAAAGAAAAAAGAAAACCAAAUAAAAAUGUUUCU 3857

Qy   3845 GTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAACAGGAAAGAAGTACTATTGGAC 3904
           :| : |  |  || :|  : |  |||:||:: |||||    | || | |:|  | : | |
Db   3858 UUGUUCAGUAGAGAGUCUCUCAAUAGAUGGUUAGAAAAGCAGGAACAGGUAACAAUAGGC 3917
```

```
Qy   3905 GACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATCGATCAGTACAAGCACATGATC 3964
           |  : ||  | :   |::::  |||: :||| ||  : ||:|||:|||  ||||:||:
Db   3918 CAGCUCGCAGAUUUUGAUUUUGUAGAUUUGCCAGCAGUUGAUCAGUACAGACACAUGAUU 3977

Qy   3965 AAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAGAATGAATACCCTGCTCTGCAA 4024
          || || ||||| || || |||::||||  ::|||: || |  || :|||| ||: :|||
Db   3978 AAAGCACAACCCAAGCAAAAAUUGGACACUUCAAUCCAAACGGAGUACCCGGCUUUGCAG 4037

Qy   4025 ACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTGGCCGGTTTCT---CAGAGCTT 4081
          || |::|: :||||::| ||  |||:||| |  |: :: | |   :: :     ||||::
Db   4038 ACGAUUGUGUACCAUUCAAAAAAGAUCAAUGCAAUAUUUGGCCCGUUGUUUAGUGAGCUU 4097

Qy   4082 ACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTTCTTTTCTTTACTAGGAAAACT 4141
          || |||    : |: ||     ::||::| |  |  ::: : :: :: || || || ||
Db   4098 ACUAGGCAAUUACUGGACAGUGUUGAUUCGAGCAGAUUUUUGUUUUUCACAAGAAAGACA 4157

Qy   4142 CCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCGCACGTTCCTATGGATGTGTTA 4201
          ||||  ||||:: | || :: ::|   ||:|:||||   || |: || |:|||:|: ::
Db   4158 CCAGCGCAGAUUGAGGAUUUCUUCGGAGAUCUCGACAGUCAUGUGCCGAUGGAUGUCUUG 4217

Qy   4202 GAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAGTTTCATTGTGCTGTAGAGTAT 4261
          || |:|||:|: :| || :| || || :| ||||| || :: || :|:|| |:||| :|
Db   4218 GAGCUGGAUAUAUCAAAAUACGACAAAUCUCAGAAUGAAUUCCACUGUGCAGUAGAAUAC 4277

Qy   4262 GAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCCGAAGTGTGGAAACAAGGGCAC 4321
          || |: :||  ||||::|||: :  | || :: ::||  ||||: :|||||||||||||
Db   4278 GAGAUCUGGCGAAGAUUGGGUUUUGAAGACUUCUUGGGAGAAGUUUGGAAACAAGGGCAU 4337

Qy   4322 AGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAGACATGTCTGTGGTATCAAAGG 4381
          || || || ||  : |||||::| |  || || |: || || :|  : :||:|:|||||
Db   4338 AGAAAGACCACCCUCAAGGAUUAUACCGCAGGUAUAAAAACUUGCAUCUGGUAUCAAAGA 4397

Qy   4382 AAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTTATAATAGCAGCTTGCTTGGGT 4441
          || ||||| || |: || || ::||: || || ||:|: |: |: || || :| ::||
Db   4398 AAGAGCGGGGACGUCACGACGUUCAUUGGAAACACUGUGAUCAUUGCUGCAUGUUUGGCC 4457

Qy   4442 TCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTTTGTGGAGACGATTCCGTTTTG 4501
          :| |:| : ||||:||| ||  : |: ||||| || ::::| || |||||:    :  :|
Db   4458 UCGAUGCUUCCGAUGGAGAAAAUAAUCAAAGGAGCCUUUUGCGGUGACGAUAGUCUGCUG 4517

Qy   4502 TATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCATGTGCTAATCTCATGTGGAAT 4561
          :| :::||||||||::  || :: || ||  : ||    :  || ||:|: |:|:||||:
Db   4518 UACUUUCCAAAGGGUUGUGAGUUUCCGGAUGUGCAACACUCCGCGAAUCUUAUGUGGAAU 4577

Qy   4562 TTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTTTGTGGTAGATACATCATACAC 4621
          :::|| || ||||:|: :| |||   |:| || :||::::| || |||:|  : |:|||
Db   4578 UUUGAAGCAAAACUGUUUAAAAAACAGUAUGGAUACUUUUGCGGAAGAUAUGUAAUACAU 4637

Qy   4622 CATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAGTTGATCTCCAAACTTGGGGCA 4681
          || || |  |||   |: |:|:|::| ||:||  : |||::||:|:| ||||::|| ||
Db   4638 CACGACAGAGGAUGCAUUGUGUAUUACGAUCCCCUAAAGUUGAUCUCGAAACUUGGUGCU 4697

Qy   4682 AAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGGGTGTCTTTGTGCGATGTTGCT 4741
          ||||| |:||||||::  || |||:: || |||:: ||   |:|: : :| ||:|::||:
Db   4698 AAACACAUCAAGGAUUGGGAACACUUGGAGGAGUUCAGAAGGUCUCUUUGUGAUGUUGCU 4757

Qy   4742 TGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTGAACGCAGCTATCAAGGAGGTT 4801
            ::|| :    || :|    :    |    | ||| :| |||  ||: :   |||||::
Db   4758 GUUUCGUUGAACAAUUGUGCGUAUUAC---ACACAGUUGGACGACGCUGUAUGGGAGGUU 4814

Qy   4802 CATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGTGTTAACAAATTTTTGTGTGAT 4861
          ||:|| |||||   :   ||::||:::| :: :||  |: :    || : :::|: :||:
Db   4815 CAUAAGACCGCCCCUCCAGGUUCGUUUGUUUAUAAAAGUCUGGUGAAGUAUUUGUCUGAU 4874

Qy   4862 AAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAGTCTCAGAGATACTGTCAAAAT 4921
          ||| :: : :::|||| :::|::: :| |:|||: :   : : | ||  |  |: || |:
Db   4875 AAAGUUCUUUUUAGAAGUUUGUUUAUAGAUGGCUCUAGUUGUUAAAGGAAAAGUGAAUAU 4934

Qy   4922 TAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACTTCCGGCATTCATGACTAAGGT 4981
           |  |||:: |: || |:  | |||  |||  |||:  : ||| |  :  : ||    |:
Db   4935 CAAUGAGUUUAUCGACCUGACAAAAAUGGAGAAGAUCUUACCGUCGAUGUUUACCCCUGU 4994

Qy   4982 CAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGCTGTTAAGAATGATAGTCTTTC 5041
           |||||:|::|     :| |  |: || || |: |:|| :  : ||||:||     : :|
Db   4995 AAAGAGUGUUAUGUGUUCCAAAGUUGAUAAAAUAAUGGUUCAUGAGAAUGAGUCAUUGUC 5054

Qy   5042 TGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAAAGGGTATGTGTGCTTAGCTGA 5101
           || |:  |  : |::||||| |::||| :  :: | |  || :| |: :| ::||| |
Db   5055 AGAGGUGAACCUUCUUAAAGGAGUUAAGCUUAUUGAUAGUGGAUACGUCUGUUUAGCCGG 5114

Qy   5102 TTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTGCCGTGGTGGTGTCAGTGTTTG 5161
          :::||: |:  | || |||:||||  : || || || :|| | || ||:|: || |: :|
Db   5115 UUUGGUCGUCACGGGCGAGUGGAACUUGCCUGACAAUUGCAGAGGAGGUGUGAGCGUGUG 5174

Qy   5162 TATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAACGCTGGGTGCGTATCACGCCCC 5221
          : : |: || || || |:| ||||     | || || || |: ||  | :|  || |  |
Db   5175 UCUGGUGGACAAAAGGAUGGAAAGAGCCGACGAGGCCACUCUCGGAUCUUACUACACAGC 5234

Qy   5222 TGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAATTATTCAATAACATCCGAGGA 5281
           ||:   || || |  :::   :: ||| :  : || ||::|: | |:|||  || ||||
Db   5235 AGCUGCAAAGAAAAGAUUUCAGUUCAAGGUCGUUCCCAAUUAUGCUAUAACCACCCAGGA 5294

Qy   5282 TGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAAAGGAGTGGCTATGGAAGAAGG 5341
           ||   |||  ||   :||||||: ::||: ||:|: | |   |:|   |:|  ||  ||
Db   5295 CGCGAUGAAAAACGUCUGGCAAGUUUUAGUUAAUAUUAGAAAUGUGAAGAUGUCAGCGGG 5354

Qy   5342 ATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGTAGTACATAAAAATAATGTAAG 5401
           : |:|:||  : :|: :||||:: |: :|  : :|: : |:  |:| |||:||: :||
Db   5355 UUUCUGUCCGCUUUCUCUGGAGUUUGUGUCGGUGUGUAUUGUUUAUAGAAAUAAUAUAAA 5414

Qy   5402 AAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGGCTCGCCAATTGAACTCACTGA 5461
          |  |||:::||| ||    |::   |  |:|| ||||||   ||| |: ||||: || ||
Db   5415 AUUAGGUUUGAGAGAGAAGAUUACAAACGUGAGAGACGGAGGGCCCAUGGAACUUACAGA 5474

Qy   5462 AAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGCTGTGAAACTCGAAAAGGTTCC 5521
          | | |: |::|| |||::| :||| || |: || |:| |  : |  |: | |||| ::|
Db   5475 AGAAGUCGUUGAUGAGUUCAUGGAAGAUGUCCCUAUGUCGAUCAGGCUUGCAAAGUUUCG 5534

Qy   5522 GG------------AAAACAAAAAAGAAATGGTAGGTAATAATGTTAATAAT-------- 5561
                        |||| |   | |       ||| || ||:  :| :||:
Db   5535 AUCUCGAACCGGAAAAAAGAGUGAUGUCCGCAAAGGGAAAAAUAGUAGUAAUGAUCGGUC 5594

Qy   5562 -------AAGAAAATAAATAACAGTGGTAAGAAGGGTTTTAAAATTGAGGAAATTGAGGA 5614
                 || || |   |:|  | :| :||| |   :     ||:       |   || |
Db   5595 AGUGCCGAACAAGAACUAUAGAAAUGUUAAGGAUUUUGGAGGAAUGAGUUUUAAAAAGAA 5654

Qy   5615 TAATGTAAGTGATGACGAGT---------CTATCGCGTCATCGAGTACGTTTTAATCAAT 5665
          :||: :||  ||:|| || :         |: :|||   |:||  : ||::::|   ||:
Db   5655 UAAUUUAAUCGAUGAUGAUUCGGAGGCUACUGUCGCCGAAUCGGAUUCGUUUUA---AAU 5711

Qy   5666 ATGCCTTATACAATCAACTCTCCGAGCCAATTTGTTTACTTATCTTCCGCTTACGCAGAT 5725
          |:| |::| |  |:||   |:||    || :: |: : |:: :| :| || :  || ||
Db   5712 AUGUCUUACAGUAUCACUACUCCAUCUCAGUUCGUGUUCUUGUCAUCAGCGUGGGCCGAC 5771

Qy   5726 CCTGTGCAGCTGATCAATCTGTGTACAAATGCATTGGGTAACCAGTTTCAAACGCAACAA 5785
          ||  :  || : |: ||: : :|:|| ||:|| :: || || |||:::||||| ||||||
Db   5772 CCAAUAGAGUUAAUUAAUUUAUGUACUAAUGCCUUAGGAAAUCAGUUUCAAACACAACAA 5831

Qy   5786 GCTAGGACAACAGTCCAACAGCAATTTGCGGATGCCTGGAAACCTGTGCCTAGTATGACA 5845
          ||: | ||    |: |||   |||::    || |  :|||||||:   ||     : ||
Db   5832 GCUCGAACUGUCGUUCAAAGACAAUUCAGUGAGGUGUGGAAACCUUCACCACAAGUAACU 5891

Qy   5846 GTGAGATTTCCTGCATCGGATTTCTATGTGTATAGATATAATTCGACGCTTGATCCGTTG 5905
          |: || :: ||:|     || ::  | |:|:| || :| ||: ||    : || ||| :
Db   5892 GUUAGGUUCCCUGACAGUGACUUUAAGGUGUACAGGUACAAUGCGGUAUUAGACCCGCUA 5951

Qy   5906 ATCACGGCGTTATTAAATAGCTTTGATACTAGAAATAGAATAATAGAGGTTGATAATCAA 5965
           :||| ||  : ::|  :   :: || ||:|||||:||||:||:||| |::|| ||:||
Db   5952 GUCACAGCACUGUUAGGUGCAUUCGACACUAGAAAUAGAAUAAUAGAAGUUGAAAAUCAG 6011

Qy   5966 CCCGCACCGAATACTACTGAAATCGTTAACGCGACTCAGAGGGTAGACGATGCTACTGTA 6025
           |    || |  ||: | ||||   :  | || ||:|  || |:|||||| || || |:
Db   6012 GCGAACCCCACGACUGCCGAAACGUUAGAUGCUACUCGUAGAGUAGACGACGCAACGGUG 6071

Qy   6026 GCTATAAGGGCTTCAATCAATAATTTGGCTAATGAACTGGTTCGTGGAACTGGCATGTTC 6085
```

```
              || |:||||    | |: ||:||:::       ||| :| :  | ||||| ||    :
Db       6072 GCCAUAAGGAGCGCGAUAAAUAAUUUAAUAGUAGAAUUGAUCAGAGGAACCGGAUCUUAU 6131

Qy       6086 AATCAAGCAGGCTTTGAGACTGCTAGTGGACTTGTCTGGACCACAACTCCGGCTACTTAG 6145
              ||:|        :: ||||   |:  :||  : |: :||||  |    |||||  | :||
Db       6132 AAUCGGAGCUCUUUCGAGAGCUCUUCUGGUUUGGUUUGGACGUCUGGGCCGGCAUCAUAG 6191

Qy       6146 CTATTGTTG 6154
              | |::  :|
Db       6192 CAAUUAAUG 6200


RESULT 11
US-09-962-527-3
; Sequence 3, Application US/09962527
; Publication No. US20030049813A1
;   GENERAL INFORMATION:
;        APPLICANT: GARGER, STEPHEN
;                   HOLTZ, R. BARRY
;                   McCULLOCH, MICHAEL
;                   TURPEN, THOMAS
;        TITLE OF INVENTION: A PROCESS FOR ISOLATING AND
;                            PURIFYING VIRUSES SOLUBLE PROTEINS AND PEPTIDES
;                            FROM PLANT SOURCES
;        NUMBER OF SEQUENCES: 5
;        CORRESPONDENCE ADDRESS:
;             ADDRESSEE: Howrey & Simon
;             STREET: 1299 Pennsylvania Avenue N.W.
;             CITY: Washington
;             STATE: DC
;             COUNTRY: USA
;             ZIP: 20004
;        COMPUTER READABLE FORM:
;             MEDIUM TYPE: Diskette
;             COMPUTER: IBM Compatible
;             OPERATING SYSTEM: DOS
;             SOFTWARE: FastSEQ for Windows Version 2.0
;        CURRENT APPLICATION DATA:
;             APPLICATION NUMBER: US/09/962,527
;             FILING DATE: 24-Sep-2001
;             CLASSIFICATION: <Unknown>
;        PRIOR APPLICATION DATA:
;             APPLICATION NUMBER: 09/037,751
;             FILING DATE: 10-march-1998
;        ATTORNEY/AGENT INFORMATION:
;             NAME: Halluin, Albert P
;             REGISTRATION NUMBER: 25,277
;             REFERENCE/DOCKET NUMBER: 00801.0140.999
;        TELECOMMUNICATION INFORMATION:
;             TELEPHONE: 650-463-8109
;             TELEFAX: 650-463-8400
;             TELEX: <Unknown>
;   INFORMATION FOR SEQ ID NO: 3:
;        SEQUENCE CHARACTERISTICS:
;             LENGTH: 6425 base pairs
;             TYPE: nucleic acid
;             STRANDEDNESS: single
;             TOPOLOGY: unknown
;        MOLECULE TYPE: Genomic RNA
;        SEQUENCE DESCRIPTION: SEQ ID NO: 3:
US-09-962-527-3

  Query Match             38.3%;  Score 2431.2;  DB 10;  Length 6425;
  Best Local Similarity   44.4%;  Pred. No. 0;
  Matches 2852;  Conservative 1174;  Mismatches 2298;  Indels   96;  Gaps   12;

Qy         20 ACAACAACAATTAAAACAAAAACAACATATTACAAACAACAAACAACAACAATGGCACAC 79
              || |  |  |  |||  | ||||||||:   |   || |   ||||  ||||:|||| ||
Db         18 ACCAACAACAACAAACAACAAACAACAUUACAAUUACUAUUUACAAUUACAAUGGCAUAC 77

Qy         80 ATACAATCTATAATTAGCAACGCCCTTCTTGAAAGCGTGAGTGGTAAAAACACTCTCGTT 139
              | |||  |    |  |     ||  : |: || |  |:  | || || ||| |  : |:
Db         78 ACACAGACAGCUACCACAUCAGCUUUGCUGGACACUGUCCGAGGAAACAACUCCUUGGUC 137

Qy        140 AATGACCTTGCAAGAAGGCGCATGTACGATACGGCCGTGGAAGAATTTAACGCCCGCGAC 199
              ||:|| |: ||||   | ||  : :|||| || || |: ||||| :::||||| || |||
Db        138 AAUGAUCUAGCAAAGCGUCGUCUUUACGACACAGCGGUUGAAGAGUUUAACGCUCGUGAC 197

Qy        200 CGTAGACCAAAGGTCAACTTTTCCAAAACTATTAGCGAAGAGCAAACGCTTCTAGTCTCC 259
              || || || ||||: |||::::| |||   |: ||||| ||||| ||||:: : |   ||
Db        198 CGCAGGCCCAAGGUGAACUUUUCAAAAGUAAUAAGCGAGGAGCAGACGCUUAUUGCUACC 257

Qy        260 AACGCGTACCCGGAGTTCCAGATTACCTTTTATAATACTCAAAATGCCGTACACAGTTTG 319
                 |||:| || || ::||| |::|| ::::|:|| || |||||:||||: ||     :
Db        258 CGGGCGUAUCCAGAAUUCCAAAUUACAUUUUAUAACACGCAAAAUGCCGUGCAUUCGCUU 317

Qy        320 GCTGGAGGTTTGAGAGCATTAGAATTGGAATATCTGATGCTACAAGTTCCCTATGGATCG 379
              || || || ::| || | ::|||| :||||:|:|:||:| : ||| ::|||:| |||:|
Db        318 GCAGGUGGAUUGCGAUCUUUAGAACUGGAAUAUCUGAUGAUGCAAAUUCCCUACGGAUCA 377

Qy        380 CCGACATATGATATAGGTGGGAACTTTGCAGCACATTTGTTCAAAGGCAGGGATTACGTG 439
                ||| :|:|| |:||| ||||| :::||| | ||: :|::||| ||  | |  :| |:
Db        378 UUGACUUAUGACAUAGGCGGGAAUUUUGCAUCGCAUCUGUUCAAGGGACGAGCAUAUGUA 437

Qy        440 CATTGCTGTATGCCCAATCTGGACATACGAGATATAATGAGGCACGAAGGACAAAAGGAC 499
              || :||:| |:|||||| |:|||| : ||||| |: |:| |||||||||| || || |||
Db        438 CACUGCUGCAUGCCCAACCUGGACGUUCGAGACAUCAUGCGGCACGAAGGCCAGAAAGAC 497

Qy        500 TCAATTGAGATGTATTTGTCCAGATTGTCTCGTTCTAACAAGGTAATTCCTGAGTTTCAA 559
                 |::||  : :|  : :| ||  :     |       ||   | : ||  | :: |||
Db        498 AGUAUUGAACUAUACCUUUCUAGGCUAGAGAGAGGGGGGAAAACAGUCCCCAACUUCCAA 557

Qy        560 AGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAAGTCTGCTGCTCTAAAACTTTT 619
              | ||| || ::: |||| :| ||||||  :||  | || |    |:|    || ||:::
Db        558 AAGGAAGCAUUUGACAGAUACGCAGAAAUUCCUGAAGACGCUGUCUGUCACAAUACUUUC 617

Qy        620 CAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGAAGATACGCTGTTGCTCTGCAC 679
              |||      |||   || |||    || |    || |||   :| ||  ::|| |: |||
Db        618 CAGACAAUGCGACAUCAGCCGAUGCAGCAAUCAGGCAGAGUGUAUGCCAUUGCGCUACAC 677

Qy        680 AGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCGTTAATATCTAAGAATATACAT 739
              ||  : :|:|| |: || |   |:|||:: || || ||  :  :    || ||: : ||:
Db        678 AGCAUAUAUGACAUACCAGCCGAUGAGUUCGGGGCGGCACUCUUGAGGAAAAAUGUCCAU 737

Qy        740 GTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTACTAGACCAGACGGAGGTTACG 799
                 :| :|:|| ||:: |   ::  | ||     :  : |: ||  |  |  | |:  |
Db        738 ACGUGCUAUGCCGCUUUCCACUUCUCUGAGAACCUGCUUCUUGAAGAUUCAUACGUCAAU 797

Qy        800 CTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGATGATGTTTCTTTTTTCTTTGCT 859
               :  | ||||:   |||   :::     | || || ||  |  :  | ::::  :::||
Db        798 UUGGACGAAAUCAACGCGUGUUUUUCGCGCGAUGGAGACAAGUUGACCUUUUCUUUUGCA 857

Qy        860 GATGAAAGTACTTTAAATTATAGTCATAAATACAAAAATATCTTGCATTATGTAGTTAAA 919
                 || ||:||: : ||::|: |:||:|  :|    ||:|:  :  | :|:|:    |||
Db        858 UCAGAGAGUACUCUUAAUUAUUGUCAUAGUUAUUCUAAUAUUCUUAAGUAUGUGUGCAAA 917

Qy        920 TCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAGGAATTTTTAGTCACTAGGGTT 979
               |::||:: || || :|:| :|||   |:::|| : ||||| :::::||:||| || |::
Db        918 ACUUACUUCCCGGCCUCUAAUAGAGAGGUUUACAUGAAGGAGUUUUUAGUCACCAGAGUU 977

Qy        980 AATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTATATTCTGTACAAGAGTGTTAGA 1039
              ||:|| :||::::|:|| ::: | | | :|||:|| : : :: :|:||||  |:|:
Db        978 AAUACCUGGUUUUGUAAGUUUUCUAGAAUAGAUACUUUUCUUUUGUACAAAGGUGUGGCC 1037

Qy       1040 CAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATGGAAGACGCCTTTGCTTACAAG 1099
              ||   | |    ||:||:|| |||:: :|:   || |:||||||||| :    ::||||
Db       1038 CAUAAAAGUGUAGAUAGUGAGCAGUUUUAUACUGCAAUGGAAGACGCAUGGCAUUACAAA 1097

Qy       1100 AAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTTAGAGACACGGCTTCGGTTAAC 1159
              || ||  : || |:|: |||||  || |||    :| ::   ||  |  | :| |: ||
Db       1098 AAGACUCUUGCAAUGUGCAACAGCGAGAGAAUCCUCCUUGAGGAUUCAUCAUCAGUCAAU 1157

Qy       1160 TTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCGCTGTTTGAGGGTTCTATTACC 1219
              :  :||:: || || |:|| ||| |:||: |: |:|||  : :: ||   ::|: :
Db       1158 UACUGGUUUCCCAAAAUGAGGGAUAUGGUCAUCGUACCAUUAUUCGACAUUUCUUUGGAG 1217
```

```
Qy     1220 AGCAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGTGACTTCGTTTACACAGTGCTT 1279
            |  |  |||| |||  | |  || |:| : |:       || ::||: :  ||||:||::
Db     1218 ACUAGUAAGAGGACGCGCAAGGAAGUCUUAGUGUCCAAGGAUUUCGUGUUUACAGUGCUU 1277

Qy     1280 AATCATATCAGAACATATCAAGCCAAAGCGTTAACTTACCAGAACGTATTATCTTTCGTG 1339
            || || |:  |||||:| || || |||||  : || :||   || |: :: :| :: |:
Db     1278 AACCACAUUCGAACAUACCAGGCGAAAGCUCUUACAUACGCAAAUGUUUUGUCCUUUGUC 1337

Qy     1340 GAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACTGCTAGGTCTGAATGGGATGTA 1399
            || :| |:  ||:|  | |: |: |: || ||:|: || || |||:| |||:||||:|:
Db     1338 GAAUCGAUUCGAUCGAGGGUAAUCAUUAACGGUGUGACAGCGAGGUCCGAAUGGGAUGUG 1397

Qy     1400 GATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTCTTGCAGACTAAGCTGGCTGCG 1459
            || ||| |  :  : ||| ||::|:| |:||| :: : | :||| ||:||||: || |
Db     1398 GACAAAUCUUUGUUACAAUCCUUGUCCAUGACGUUUUACCUGCAUACUAAGCUUGCCGUU 1457

Qy     1460 CTTCAAGACGATATAGTAATGGGAAAGTTTCGGTGCTTGGATAAGACCACTTCTGAACTT 1519
            |:  | || ||  :| : |:  | |||::: |   |      || ||    :   | | :
Db     1458 CUAAAGGAUGACUUACUGAUUAGCAAGUUUAGUCUCGGUUCGAAAACGGUGUGCCAGCAU 1517

Qy     1520 ATTTGGGATGAGGTGGGCAAATTTTTTGGAAACGTTTTCCCCACTATCAAAGAGAGATTG 1579
             : :||||:||| :          :::|| ||||  :: ||| |  : ||||||||  :
Db     1518 GUGUGGGAUGAGAUUUCGCUGGCGUUUGGGAACGCAUUUCCCUCCGUGAAAGAGAGGCUC 1577

Qy     1580 GTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTGAAGATCAAGATCCCAGATCTG 1639
             :|| ||||||| :: :    |:    |   | ||  :  |||:|| | : || ||:|:
Db     1578 UUGAACAGGAAACUUAUCAGAGUGGCAGGCGACGCAUUAGAGAUCAGGGUGCCUGAUCUA 1637

Qy     1640 TATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACCAAGTCTGAGGAGTTACCGCAT 1699
            :|:|: || :   | ||||| :: |:  |:|| :|||     :|:| |||  : ||
Db     1638 UAUGUGACCUUCCACGACAGAUUAGUGACUGAGUACAAGGCCUCUGUGGACAUGCCUGCG 1697

Qy     1700 CTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATGTACGACGCGTTATCAGAATTA 1759
            |: || |: | |||| |  : |||||| | ||    |:|:|| | ||  : :|||| ::|
Db     1698 CUUGACAUUAGGAAGAAGAUGGAAGAAACGGAAGUGAUGUACAAUGCACUUUCAGAGUUA 1757

Qy     1760 TCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAGTTCAAAGACATGTGCAAGGCT 1819
            :|  :  : | ||   |:|| || ::|||: : |     ::     | |:|:|| |  |:
Db     1758 UCGGUGUUAAGGGAGUCUGACAAAUUCGAUGUUGAUGUUUUUUCCCAGAUGUGCCAAUCU 1817

Qy     1820 TTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTTGCAGTGGCCGAGAATAGAAGC 1879
            :: || |::   ||      ||||||    |: |: |: || |:       ||:   |||
Db     1818 UUGGAAGUUGACCCAAUGACGGCAGCGAAGGUUAUAGUCGCGGUCAUGAGCAAUGAGAGC 1877

Qy     1880 GGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAATGTGGCTAAGGCTCT------T 1933
            ||: : ||:|: || :::||    || || |||| |||:|: ||    ||: :      :
Db     1878 GGUCUGACUCUCACAUUUGAACGACCUACUGAGGCGAAUGUUGCGCUAGCUUUACAGGAU 1937

Qy     1934 AAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCGACATCCGAAGAGGTGAACGTA 1993
             ||   | ||| :| || |  |   :     ::    | | |   |  || |
Db     1938 CAAGAGAAGGCUUCAGAAGGUGCUUUGGUAGUUACCUCAAGAGAAGUUGAAGAACCGUCC 1997

Qy     1994 AATAAATTTTCTATTGCTGAGAAAGGGAGATTGCCTGTGTGTGCAGAAAGTCATGGTTTG 2053
            |  ||   ::| |: ||      || |  |      |   |:   |   |  |:  :  |
Db     1998 AUGAAGGGUUCGAUGGCCAGAGGAGAGUUACAAUUAGCUGGUCUUGCUGGAGAUCAUCCG 2057

Qy     2054 ACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTCAACGATTTCCATAAGGCTTGC 2113
              |    |  | :   || || ||||| : |||:|  :  |  | :: ||:| |||
Db     2058 GAGUCGUCCUAUUCUAAGAACGAGGAGAUAGAGUCUUUAGAGCAGUUUCAUAUGGCAACG 2117

Qy     2114 GTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTCTACACTGGCTCACTCAAAGTT 2173
            |  ||:    : |::   ||||| |:|   :|| ::|: :|||| ||  |  : ||||::
Db     2118 GCAGAUUCGUUAAUUCGUAAGCAGAUGAGCUCGAUUGUGUACACGGGUCCGAUUAAAGUU 2177

Qy     2174 CAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCGTTGTCCGCCACTGTATCAAAT 2233
            || ||||:||| |||: : : || ||  :|| ||| :|  : :| ||  | |: :| ||:
Db     2178 CAGCAAAUGAAAAACUUUAUCGAUAGCCUGGUAGCAUCACUAUCUGCUGCGGUGUCGAAU 2237

Qy     2234 CTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCTGATTCCAGGGAGAAAGTTGGT 2293
            |:   ||||   |: || ||:  ||  |    :||   :||  || |  | ||  ::||
Db     2238 CUCGUCAAGAUCCUCAAAGAUACAGCUGCUAUUGACCUUGAAACCCGUCAAAAGUUUGGA 2297

Qy     2294 GTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCTGCGGCCAAAGGTCATTCATGG 2353
            |: : |||:|:  | :  |  |||:|| :  :||||||  |||||||  |:||: ||:||
Db     2298 GUCUUGGAUGUUGCAUCUAGGAAGUGGUUAAUCAAACCAACGGCCAAGAGUCAUGCAUGG 2357

Qy     2354 GGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCACTTCTATCTTATGAAGGAGAT 2413
            || |::|:        ||  | ||||      :   || |:: :    :|:|| |   |
Db     2358 GGUGUUGUUGAAACCCACGCGAGGAAGUAUCAUGUGGCGCUUUUGGAAUAUGAUGAGCAG 2417

Qy     2414 AGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTATCATCTGATACAATGGTATAT 2473
             |  :||:|||       || :|||| || |: ||:|:    :|:||  |  : |: :|:
Db     2418 GGUGUGGUGACAUGCGAUGAUUGGAGAAGAGUAGCUGUCAGCUCUGAGUCUGUUGUUUAU 2477

Qy     2474 TCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATGAGAGACGGTGAACCCCACGAA 2533
            :| || |: || || |:|  || :|:| | | |    :  || |||| ||||| || |
Db     2478 UCCGACAUGGCGAAACUCAGAACUCUGCGCAGACUGCUUCGAAACGGAGAACCGCAUGUC 2537

Qy     2534 CCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGTTGTGGAAAGTACAAAGGAGAT 2593
              :|  |||||| : |:  |::|:||| || |: || || :|:|| ||   ||||| |  :
Db     2538 AGUAGCGCAAAGGUUGUUCUUGUGGACGGAGUUCCGGGCUGUGGGAAAACCAAAGAAAUU 2597

Qy     2594 TTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTTCCTGGAAAACAAGCTGCTGCT 2653
             ::   ||  :: |: ::||:|| ||: : |: :: |: ||:|| || ||||| || |
Db     2598 CUUUCCAGGGUUAAUUUUGAUGAAGAUCUAAUUUUAGUACCUGGGAAGCAAGCCGCGGAA 2657

Qy     2654 ATGATCAGAAGAAGGGCTAATTCATCTGGACTGATAAGAGCCACAATGGACAATGTGAGA 2713
            |:||:||||||| | || ||::| :| ||  : |:    ||||| | |||||| |: | |
Db     2658 AUGAUCAGAAGACGUGCGAAUUCCUCAGGGAUUAUUGUGGCCACGAAGGACAACGUUAAA 2717

Qy     2714 ACGGTAGATTCACTTCTAATGCAT---------CCAAAACCGCGATCACACAAGAGGCTT 2764
            || |: ||::|  :  : |:| |:            | ||   |      ||||||| :
Db     2718 ACCGUUGAUUCUUUCAUGAUGAAUUUUGGGAAAAGCACACGCUGUCAGUUCAAGAGGUUA 2777

Qy     2765 TTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTTAACTTCCTGGTGCTTATCTCT 2824
            :: |::||:||||||::||:| :||| || ||::|:|::|| :: |: |:|   |: :|
Db     2778 UUCAUUGAUGAAGGGUUGAUGUUGCAUACUGGUUGUGUUAAUUUUCUUGUGGCGAUGUCA 2837

Qy     2825 GGTTGCGACATCGCATACATTTACGGAGATACACAGCAGATTCCTTTCATTAACAGAGTT 2884
               :|||| |: |||:|  :::||||||| ||||||||||::|| : ||: || ||||::
Db     2838 UUGUGCGAAAUUGCAUAUGUUUACGGAGACACACAGCAGAUUCCAUACAUCAAUAGAGUU 2897

Qy     2885 CAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAAGTGGATGAAGTTGAGATGAGG 2944
                  ::||||:| |||   ||::::|  ||  :| |||: || || |: ||||   |
Db     2898 UCAGGAUUCCCGUACCCCGCCCAUUUUGCCAAAUUGGAAGUUGACGAGGUGGAGACACGC 2957

Qy     2945 AGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTCCTACAATCGAAGTACGAAGGA 3004
            || || || |:  | :| ||||  ||:|: |    ::  |:  |   ||  :| || ||
Db     2958 AGAACUACUCUCCGUUGUCCAGCCGAUGUCACACAUUAUCUGAACAGGAGAUAUGAGGGC 3017

Qy     3005 GCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCATCTGAGATGATAGGCGGTAAG 3064
               |: |  | |||::|  | |:  ||   :| |: :|    ||||:| : |||||
Db     3018 UUUGUCAUGAGCACUUCUUCGGUUAAAAAGUCUGUUUCGCAGGAGAUGGUCGGCGGAGCC 3077

Qy     3065 GGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGGAAAATTGTAACTTTCACTCAGGCT 3124
            |  |:  : ||     : :| |||||  :  | || || |:  : ||::: || ||  |
Db     3078 GCCGUGAUCAAUCCGAUCUCAAAACCCUUGCAUGGCAAGAUCCUGACUUUUACCCAAUCG 3137

Qy     3125 GATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTGAACACCGTTCATGAGATCCAA 3184
            ||:|||   |   :       |  || :|:    |:|:  |||| |: ||:||  : |||
Db     3138 GAUAAAGAAGCUCUGCUUUCAAGAGGGUAUUCAGAUGUUCACACUGUGCAUGAAGUGCAA 3197

Qy     3185 GGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACGGCAACTCCACTGACTCTGATT 3244
            || || || :     ||:|: :| |: |: || :: ||  | || ||| :  |  : |::
Db     3198 GGCGAGACAUACUCUGAUGUUUCACUAGUUAGGUUAACCCCUACACCAGUCUCCAUCAUU 3257

Qy     3245 TCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGACACACAAAGAGCTTCAAATAT 3304
             |         ||| ||:|:: : |:|||  :| | || |||||        :||| :|
Db     3258 GCAGGAGACAGCCCACAUGUUUUGGUCGCAUUGUCAAGGCACACCUGUUCGCUCAAGUAC 3317

Qy     3305 TACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGTGATTTGTCTTCTTTAAGCTCC 3364
            :|||| |: |:  : ||:||:::||:    |: |::|| ||: :        : |||:|
Db     3318 UACACUGUUGUUAUGGAUCCUUUAGUUAGUAUCAUUAGAGAUCUAGAGAAACUUAGCUCG 3377

Qy     3365 TTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGATAGCAATTACAGATGGATGCA 3424
            : | : ::||| |:|:|:| ||: || ||||| |    |:|||||::|||||: ||  |
```

```
Db        3378 UACUUGUUAGAUAUGUAUAAGGUCGAUGCAGGAACACAAUAGCAAUUACAGAUUGACUCG 3437

Qy        3425 GTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAATCAGGAGACTTTCCAGATCTA 3484
               |:|::||||||:   ||:|: :::|: ||| | || ||  | || ||  :: | ||: :
Db        3438 GUGUUCAAAGGUUCCAAUCUUUUUGUUGCAGCGCCAAAGACUGGUGAUAUUUCUGAUAUG 3497

Qy        3485 CAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACTATACTTAACAAGTATGATGCT 3544
               |||:: :| :| ||:   :| |:||| || || || || |:  : || || : :||:||:
Db        3498 CAGUUUUACUAUGAUAAGUGUCUCCCAGGCAACAGCACCAUGAUGAAUAAUUUUGAUGCU 3557

Qy        3545 GTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAGGATTGTGTTCTTGATTTTTCC 3604
               |::||||:||||::   :|| | :    : ||:|: || ||::|  :  : ||: : :|
Db        3558 GUUACCAUGAGGUUGACUGACAUUUCAUUGAAUGUCAAAGAUUGCAUAUUGGAUAUGUCU 3617

Qy        3605 AAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTAGAGCCAGTTTTGCGTACCGCG 3664
               ||   : :: |   ||| ||||||    |    |   |:|   ||  :  : || || |||
Db        3618 AAGUCUGUUGCUGCGCCUAAGGAUCAAAUCAAACCACUAAUACCUAUGGUACGAACGGCG 3677

Qy        3665 GCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTGGTTGCAATGATTAAAAGAAAT 3724
               || |||  |||| |     | ||||:| : |||||: : |: || |:||::||||| ||
Db        3678 GCAGAAAUGCCACGCCAGACUGGACUAUUGGAAAAUUUAGUGGCGAUGAUUAAAAGGAAC 3737

Qy        3725 TTCAACGCACCAGACCTGACGGGGACGATTGACATTGAGAGCACCGCATCTGTTGTAGTA 3784
               :: ||||||||| ||  :| | || |  |::|| |::|| |  || |||:|: : |: |:|
Db        3738 UUUAACGCACCCGAGUUGUCUGGCAUCAUUGAUAUUGAAAAUACUGCAUCUUUAGUUGUA 3797

Qy        3785 GATAAGTTTTTTGATAGCTATTTTATTAAAAAAGAAAAATACACAAAAAATATTGCTGGA 3844
               ||:|||::::::||:|| :|:::  ::||| || ||| | |  |||| || | :| :
Db        3798 GAUAAGUUUUUUGAUAGUUAUUUGCUUAAAGAAAAAAGAAAACCAAAUAAAAAUGUUUCU 3857

Qy        3845 GTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAACAGGAAAGAAGTACTATTGGAC 3904
                :| : |  |  || :|  : |  |||:||:: |||||   | || | |:|  | : | |
Db        3858 UUGUUCAGUAGAGAGUCUCUCAAUAGAUGGUUAGAAAAGCAGGAACAGGUAACAAUAGGC 3917

Qy        3905 GACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATCGATCAGTACAAGCACATGATC 3964
                |  : ||  | :   |::::  |||: :||| ||  : ||:|||:|||  ||||:||:
Db        3918 CAGCUCGCAGAUUUUGAUUUUGUAGAUUUGCCAGCAGUUGAUCAGUACAGACACAUGAUU 3977

Qy        3965 AAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAGAATGAATACCCTGCTCTGCAA 4024
               || || ||||| || || |||::||||  ::|||: || |  || :|||| ||: :|||
Db        3978 AAAGCACAACCCAAGCAAAAAUUGGACACUUCAAUCCAAACGGAGUACCCGGCUUUGCAG 4037

Qy        4025 ACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTGGCCGGTTTCTCA---GAGCTT 4081
               || |::|: :||||::| ||  |||:||| |  |: :: | |   :: :     ||||::
Db        4038 ACGAUUGUGUACCAUUCAAAAAAGAUCAAUGCAAUAUUUGGCCCGUUGUUUAGUGAGCUU 4097

Qy        4082 ACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTTCTTTTCTTTACTAGGAAAACT 4141
               || |||    : |: ||     ::||::| |  |  ::: : :: :: || || || ||
Db        4098 ACUAGGCAAUUACUGGACAGUGUUGAUUCGAGCAGAUUUUUGUUUUUCACAAGAAAGACA 4157

Qy        4142 CCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCGCACGTTCCTATGGATGTGTTA 4201
               ||||  ||||:: | || :: ::|   ||:|:||||   || |: || |:|||:|: ::
Db        4158 CCAGCGCAGAUUGAGGAUUUCUUCGGAGAUCUCGACAGUCAUGUGCCGAUGGAUGUCUUG 4217

Qy        4202 GAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAGTTTCATTGTGCTGTAGAGTAT 4261
               || |:|||:|: :| || :| || || :| ||||| || :: || :|:|| |:||| :|
Db        4218 GAGCUGGAUAUAUCAAAAUACGACAAAUCUCAGAAUGAAUUCCACUGUGCAGUAGAAUAC 4277

Qy        4262 GAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCCGAAGTGTGGAAACAAGGGCAC 4321
               || |: :||  ||||::|||: :  | || :: ::||  ||||: :||||||||||||||
Db        4278 GAGAUCUGGCGAAGAUUGGGUUUUGAAGACUUCUUGGGAGAAGUUUGGAAACAAGGGCAU 4337

Qy        4322 AGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAGACATGTCTGTGGTATCAAAGG 4381
               || || || ||  : |||||::| |  || || |: || || :|  : :||:|:|||||
Db        4338 AGAAAGACCACCCUCAAGGAUUAUACCGCAGGUAUAAAAACUUGCAUCUGGUAUCAAAGA 4397

Qy        4382 AAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTTATAATAGCAGCTTGCTTGGGT 4441
               || ||||| || |: || || ::||: || || ||:|: |: |: || || :| ::||
Db        4398 AAGAGCGGGGACGUCACGACGUUCAUUGGAAACACUGUGAUCAUUGCUGCAUGUUUGGCC 4457

Qy        4442 TCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTTTGTGGAGACGATTCCGTTTTG 4501
               :| |:| : ||||:||| ||  : |: |||||| || ::::| || |||||:    :  :|
Db        4458 UCGAUGCUUCCGAUGGAGAAAAUAAUCAAAGGAGCCUUUUGCGGUGACGAUAGUCUGCUG 4517

Qy        4502 TATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCATGTGCTAATCTCATGTGGAAT 4561
               :| :::||||||||::  || :: || ||  : ||    :  || ||:|: |:|:||||:
Db        4518 UACUUUCCAAAGGGUUGUGAGUUUCCGGAUGUGCAACACUCCGCGAAUCUUAUGUGGAAU 4577

Qy        4562 TTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTTTGTGGTAGATACATCATACAC 4621
               :::|| || ||||:|: :| |||   |:| || :||::::| || |||:|  : |:|||
Db        4578 UUUGAAGCAAAACUGUUUAAAAAACAGUAUGGAUACUUUUGCGGAAGAUAUGUAAUACAU 4637

Qy        4622 CATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAGTTGATCTCCAAACTTGGGGCA 4681
               || || |  |||   |: |:|:|::| ||:||  : |||::||:|:| ||||::|| ||
Db        4638 CACGACAGAGGAUGCAUUGUGUAUUACGAUCCCCUAAAGUUGAUCUCGAAACUUGGUGCU 4697

Qy        4682 AAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGGGTGTCTTTGTGCGATGTTGCT 4741
               ||||| |:||||||::  || |||:: || |||:: ||   |:|: : :| ||:|::||:
Db        4698 AAACACAUCAAGGAUUGGGAACACUUGGAGGAGUUCAGAAGGUCUCUUUGUGAUGUUGCU 4757

Qy        4742 TGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTGAACGCAGCTATCAAGGAGGTT 4801
                 ::|| :    |||   :|       :   | ||| :| |||  ||: :   |||||::
Db        4758 GUUUCGUU---GAACAAUUGUGCGUAUUACACACAGUUGGACGACGCUGUAUGGGAGGUU 4814

Qy        4802 CATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGTGTTAACAAATTTTTGTGTGAT 4861
               ||:|| |||||   :   ||::||:::| :: :||  |: :    || : :::|: :||:
Db        4815 CAUAAGACCGCCCCUCCAGGUUCGUUUGUUUAUAAAAGUCUGGUGAAGUAUUUGUCUGAU 4874

Qy        4862 AAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAGTCTCAGAGATACTGTCAAAAT 4921
               ||| :: : :::|||| :::|::: :| |:|||: :   : : | ||  |  |: || |:
Db        4875 AAAGUUCUUUUUAGAAGUUUGUUUAUAGAUGGCUCUAGUUGUUAAAGGAAAAGUGAAUAU 4934

Qy        4922 TAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACTTCCGGCATTCATGACTAAGGT 4981
                |  |||:: |: || |:  | |||  |||  |||:  : ||| |  :  : ||    |:
Db        4935 CAAUGAGUUUAUCGACCUGACAAAAAUGGAGAAGAUCUUACCGUCGAUGUUUACCCCUGU 4994

Qy        4982 CAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGCTGTTAAGAATGATAGTCTTTC 5041
                |||||:|::|     :| |  |: || || |: |:|| :  : ||||:||     : :|
Db        4995 AAAGAGUGUUAUGUGUUCCAAAGUUGAUAAAAUAAUGGUUCAUGAGAAUGAGUCAUUGUC 5054

Qy        5042 TGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAAAGGGTATGTGTGCTTAGCTGA 5101
                || |:  |  : |::||||| |::||| :  :: | |  || :| |: :| ::||| |
Db        5055 AGAGGUGAACCUUCUUAAAGGAGUUAAGCUUAUUGAUAGUGGAUACGUCUGUUUAGCCGG 5114

Qy        5102 TTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTGCCGTGGTGGTGTCAGTGTTTG 5161
               :::||: |:  | || |||:||||  : || || || :|| | || ||:|: || |: :|
Db        5115 UUUGGUCGUCACGGGCGAGUGGAACUUGCCUGACAAUUGCAGAGGAGGUGUGAGCGUGUG 5174

Qy        5162 TATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAACGCTGGGTGCGTATCACGCCCC 5221
               : : |: || || || |:| ||||     | || || || |: ||  | :|  || |  |
Db        5175 UCUGGUGGACAAAAGGAUGGAAAGAGCCGACGAGGCCACUCUCGGAUCUUACUACACAGC 5234

Qy        5222 TGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAATTATTCAATAACATCCGAGGA 5281
                ||:   || || |  :::   :: ||| :  : || ||::|: | |:|||  || ||||
Db        5235 AGCUGCAAAGAAAAGAUUUCAGUUCAAGGUCGUUCCCAAUUAUGCUAUAACCACCCAGGA 5294

Qy        5282 TGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAAAGGAGTGGCTATGGAAGAAGG 5341
                ||   |||  ||   :||||||: ::||: ||:|: | |   |:|   |:|  ||  ||
Db        5295 CGCGAUGAAAAACGUCUGGCAAGUUUUAGUUAAUAUUAGAAAUGUGAAGAUGUCAGCGGG 5354

Qy        5342 ATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGTAGTACATAAAAATAATGTAAG 5401
                : |:|:||  : :|: :||||:: |: :|  : :|: : |:  |:| |||:||: :||
Db        5355 UUUCUGUCCGCUUUCUCUGGAGUUUGUGUCGGUGUGUAUUGUUUAUAGAAAUAAUAUAAA 5414

Qy        5402 AAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGGCTCGCCAATTGAACTCACTGA 5461
               |  |||:::||| ||    |::   |  |:|| ||||||   ||| |: ||||: || ||
Db        5415 AUUAGGUUUGAGAGAGAAGAUUACAAACGUGAGAGACGGAGGGCCCAUGGAACUUACAGA 5474

Qy        5462 AAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGCTGTGAAACTCGAAAAGGTTC- 5520
               | | |: |::|| |||::| :||| || |: || |:| |  : |  |: | |||| ::|
Db        5475 AGAAGUCGUUGAUGAGUUCAUGGAAGAUGUCCCUAUGUCGAUCAGGCUUGCAAAGUUUCG 5534

Qy        5521 -----------CGGAAAACAAAAAAGAAATGGTAGGTAATAATGTTAATAAT-------- 5561
                             |||| |   | |       ||| || ||:  :| :||:
Db        5535 AUCUCGAACCGGAAAAAAGAGUGAUGUCCGCAAAGGGAAAAAUAGUAGUAAUGAUCGGUC 5594
```

```
Qy      5562 -------AAGAAAATAAATAACAGTGGTAAGAAGGGTTTTAAAATTGAGGAAATTGAGGA 5614
                    || || |   |:|  | :| :||| |   :     ||:       |   || |
Db      5595 AGUGCCGAACAAGAACUAUAGAAAUGUUAAGGAUUUUGGAGGAAUGAGUUUUAAAAAGAA 5654

Qy      5615 TAATGTAAGTGATGACGAGT---------CTATCGCGTCATCGAGTACGTTTTAATCAAT 5665
             :||: :||  ||:|| || :         |: :|||   |:||  : ||::::|   ||:
Db      5655 UAAUUUAAUCGAUGAUGAUUCGGAGGCUACUGUCGCCGAAUCGGAUUCGUUUUA---AAU 5711

Qy      5666 ATGCCTTATACAATCAACTCTCCGAGCCAATTTGTTTACTTATCTTCCGCTTACGCAGAT 5725
             |:| |::| |  |:||   |:||    || :: |: : |:: :| :| || :  || ||
Db      5712 AUGUCUUACAGUAUCACUACUCCAUCUCAGUUCGUGUUCUUGUCAUCAGCGUGGGCCGAC 5771

Qy      5726 CCTGTGCAGCTGATCAATCTGTGTACAAATGCATTGGGTAACCAGTTTCAAACGCAACAA 5785
             ||  :  || : |: ||: : :|:|| ||:|| :: || || |||:::||||| ||||||
Db      5772 CCAAUAGAGUUAAUUAAUUUAUGUACUAAUGCCUUAGGAAAUCAGUUUCAAACACAACAA 5831

Qy      5786 GCTAGGACAACAGTCCAACAGCAATTTGCGGATGCCTGGAAACCTGTGCCTAGTATGACA 5845
             ||: | ||    |: |||    |||::    || |  :|||||||:   ||     : ||
Db      5832 GCUCGAACUGUCGUUCAAAGACAAUUCAGUGAGGUGUGGAAACCUUCACCACAAGUAACU 5891

Qy      5846 GTGAGATTTCCTGCATCGGAT------------------------------TTCTATGTG 5875
             |: || :: ||:|||   ||:                              ::  | |:|
Db      5892 GUUAGGUUCCCUGCAGGCGAUCGGGCUGGUGACCGUGCAGGAGACAGAGACUUUAAGGUG 5951

Qy      5876 TATAGATATAATTCGACGCTTGATCCGTTGATCACGGCGTTATTAAATAGCTTTGATACT 5935
             :| || :| ||: ||    : || ||| :  :||| ||  : ::|  :   :: || ||:
Db      5952 UACAGGUACAAUGCGGUAUUAGACCCGCUAGUCACAGCACUGUUAGGUGCAUUCGACACU 6011

Qy      5936 AGAAATAGAATAATAGAGGTTGATAATCAACCCGCACCGAATACTACTGAAATCGTTAAC 5995
             |||||:||||:||:||| |::|| ||:||  |    || |  ||: | ||||   :  |
Db      6012 AGAAAUAGAAUAAUAGAAGUUGAAAAUCAGGCGAACCCCACGACUGCCGAAACGUUAGAU 6071

Qy      5996 GCGACTCAGAGGGTAGACGATGCTACTGTAGCTATAAGGGCTTCAATCAATAATTTGGCT 6055
             || ||:|  || |:|||||| || || |: || |:||||    | |: ||:||:::
Db      6072 GCUACUCGUAGAGUAGACGACGCAACGGUGGCCAUAAGGAGCGCGAUAAAUAAUUUAAUA 6131

Qy      6056 AATGAACTGGTTCGTGGAACTGGCATGTTCAATCAAGCAGGCTTTGAGACTGCTAGTGGA 6115
                ||| :| :  | ||||| ||    :  ||:|        :: ||||   |:  :||
Db      6132 GUAGAAUUGAUCAGAGGAACCGGAUCUUAUAAUCGGAGCUCUUUCGAGAGCUCUUCUGGU 6191

Qy      6116 CTTGTCTGGACCACAACTCCGGCTACTTAGCTATTGTTGTGAGATTTCCTAAAATAAAGT 6175
              : |: :||||| |   :|| || ||:    :   |: |: |   : | :|| | | |
Db      6192 UUGGUUUGGACCUCUGGUCCUGCAACU----UGAGGUAGUCAAGAUGCAUAAUAAAUAAC 6247

Qy      6176 CGCTGAAGACTTAAAATTCAGGGTGGCTGATACCAAAATCAGCAGTGGTTGTTCGTCCAC 6235
              | :   | |   ||   ||  |:||    :|| | ||     ||:| :: : | :||||
Db      6248 GGAUUGUGUCCGUAAUCACA-CGUGGUGCGUACGAUAACGCAUAGUGUUUUUCCCUCCAC 6306

Qy      6236 TTAAATATAACGATTGTCATATCTGGATCCAACAGTTAAACCATGTGATGGTGTATACTG 6295
             ::|||:  || | ::|:  : :  |    |    |: |||             :|:||
Db      6307 UUAAAUCGAAGGGUUGU-GUCUUGGAUCGCGCGGGUCAAAUGUAUAUGGUUCAUAUACAU 6365

Qy      6296 TGGTATGGCGTAAAACATCGGAGAGGTTCGAATCCTCCCCTAACCGCCGGTAGCGGCCCA 6355
               | | |     ||  |   ||| ||::||||:|| ||| : ||| ||||:|| ||||||
Db      6366 CCGCAGGCACGUAAUAAAGCGAGGGGUUCGAAUCCCCCCGUUACCCCCGGUAGGGGCCCA 6425

RESULT 12
US-10-828-029-3
; Sequence 3, Application US/10828029
; Publication No. US20040171813A1
;  GENERAL INFORMATION:
;       APPLICANT: GARGER, STEPHEN
;                  HOLTZ, R. BARRY
;                  McCULLOCH, MICHAEL
;                  TURPEN, THOMAS
;       TITLE OF INVENTION: A PROCESS FOR ISOLATING AND
;                           PURIFYING VIRUSES SOLUBLE PROTEINS AND PEPTIDES
;                           FROM PLANT SOURCES
;       NUMBER OF SEQUENCES: 5
;       CORRESPONDENCE ADDRESS:
;            ADDRESSEE: Howrey & Simon
;            STREET: 1299 Pennsylvania Avenue N.W.
;            CITY: Washington
;            STATE: DC
;            COUNTRY: USA
;            ZIP: 20004
;       COMPUTER READABLE FORM:
;            MEDIUM TYPE: Diskette
;            COMPUTER: IBM Compatible
;            OPERATING SYSTEM: DOS
;            SOFTWARE: FastSEQ for Windows Version 2.0
;       CURRENT APPLICATION DATA:
;            APPLICATION NUMBER: US/10/828,029
;            FILING DATE: 20-Apr-2004
;            CLASSIFICATION: <Unknown>
;       PRIOR APPLICATION DATA:
;            APPLICATION NUMBER: US/09/962,527
;            FILING DATE: 24-Sep-2001
;            APPLICATION NUMBER: 09/037,751
;            FILING DATE: 10-march-1998
;       ATTORNEY/AGENT INFORMATION:
;            NAME: Halluin, Albert P
;            REGISTRATION NUMBER: 25,277
;            REFERENCE/DOCKET NUMBER: 00801.0140.999
;       TELECOMMUNICATION INFORMATION:
;            TELEPHONE: 650-463-8109
;            TELEFAX: 650-463-8400
;            TELEX: <Unknown>
;  INFORMATION FOR SEQ ID NO: 3:
;       SEQUENCE CHARACTERISTICS:
;            LENGTH: 6425 base pairs
;            TYPE: nucleic acid
;            STRANDEDNESS: single
;            TOPOLOGY: unknown
;       MOLECULE TYPE: Genomic RNA
;       SEQUENCE DESCRIPTION: SEQ ID NO: 3:
US-10-828-029-3

  Query Match             38.3%;  Score 2431.2;  DB 19;  Length 6425;
  Best Local Similarity   44.4%;  Pred. No. 0;
  Matches 2852;  Conservative 1174;  Mismatches 2298;  Indels   96;  Gaps   12;

Qy        20 ACAACAACAATTAAAACAAAAACAACATATTACAAACAACAAACAACAACAATGGCACAC 79
             || |  |  |  |||  | ||||||||:   |   || |   ||||  ||||:|||| ||
Db        18 ACCAACAACAACAAACAACAAACAACAUUACAAUUACUAUUUACAAUUACAAUGGCAUAC 77

Qy        80 ATACAATCTATAATTAGCAACGCCCTTCTTGAAAGCGTGAGTGGTAAAAACACTCTCGTT 139
             | |||  |    |  |     ||  : |: || |  |:  | || || ||| |  : |:
Db        78 ACACAGACAGCUACCACAUCAGCUUUGCUGGACACUGUCCGAGGAAACAACUCCUUGGUC 137

Qy       140 AATGACCTTGCAAGAAGGCGCATGTACGATACGGCCGTGGAAGAATTTAACGCCCGCGAC 199
             ||:|| |: ||||   | ||  : :|||| || || |: ||||| :::||||| || |||
Db       138 AAUGAUCUAGCAAAGCGUCGUCUUUACGACACAGCGGUUGAAGAGUUUAACGCUCGUGAC 197

Qy       200 CGTAGACCAAAGGTCAACTTTTCCAAAACTATTAGCGAAGAGCAAACGCTTCTAGTCTCC 259
             || || || ||||: |||::::| |||   |: ||||| ||||| ||||:: : |   ||
Db       198 CGCAGGCCCAAGGUGAACUUUUCAAAAGUAAUAAGCGAGGAGCAGACGCUUAUUGCUACC 257

Qy       260 AACGCGTACCCGGAGTTCCAGATTACCTTTTATAATACTCAAAATGCCGTACACAGTTTG 319
                |||:| || || ::||| |::|| ::::|:|| || |||||:||||: ||     :
Db       258 CGGGCGUAUCCAGAAUUCCAAAUUACAUUUUAUAACACGCAAAAUGCCGUGCAUUCGCUU 317

Qy       320 GCTGGAGGTTTGAGAGCATTAGAATTGGAATATCTGATGCTACAAGTTCCCTATGGATCG 379
             || || || ::| || | ::|||| :||||:|:|:||:| : ||| ::|||:| |||:|
Db       318 GCAGGUGGAUUGCGAUCUUUAGAACUGGAAUAUCUGAUGAUGCAAAUUCCCUACGGAUCA 377

Qy       380 CCGACATATGATATAGGTGGGAACTTTGCAGCACATTTGTTCAAAGGCAGGGATTACGTG 439
               ||| :|:|| |:||| ||||| :::||| | ||: :|::||| ||  | |  :| |:
Db       378 UUGACUUAUGACAUAGGCGGGAAUUUUGCAUCGCAUCUGUUCAAGGGACGAGCAUAUGUA 437

Qy       440 CATTGCTGTATGCCCAATCTGGACATACGAGATATAATGAGGCACGAAGGACAAAAGGAC 499
             || :||:| |:|||||| |:|||| : ||||| |: |:| |||||||||| || || |||
Db       438 CACUGCUGCAUGCCCAACCUGGACGUUCGAGACAUCAUGCGGCACGAAGGCCAGAAAGAC 497

Qy       500 TCAATTGAGATGTATTTGTCCAGATTGTCTCGTTCTAACAAGGTAATTCCTGAGTTTCAA 559
```

```
                |::||  : :|  : :| ||  :     |       ||   | : ||  | :: |||
Db       498 AGUAUUGAACUAUACCUUUCUAGGCUAGAGAGAGGGGGAAAACAGUCCCCAACUUCCAA 557

Qy       560 AGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAAGTCTGCTGCTCTAAAACTTTT 619
             | ||| || ::: |||| :| ||||||  :||  | || |    |:|    || ||:::
Db       558 AAGGAAGCAUUUGACAGAUACGCAGAAAUUCCUGAAGACGCUGUCUGUCACAAUACUUUC 617

Qy       620 CAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGAAGATACGCTGTTGCTCTGCAC 679
             |||      |||   || |||    || |    || |||   :| ||  ::|| |: |||
Db       618 CAGACAAUGCGACAUCAGCCGAUGCAGCAAUCAGGCAGAGUGUAUGCCAUUGCGCUACAC 677

Qy       680 AGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCGTTAATATCTAAGAATATACAT 739
             ||  : :|:|| |: || |   |:|||:: || || ||  :  :    || ||: : ||:
Db       678 AGCAUAUAUGACAUACCAGCCGAUGAGUUCGGGGCGGCACUCUUGAGGAAAAAUGUCCAU 737

Qy       740 GTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTACTAGACCAGACGGAGGTTACG 799
                :| :|:|| ||:: |   ::  | ||     :  : |: ||  |  |  | |: |
Db       738 ACGUGCUAUGCCGCUUUCCACUUCUCUGAGAACCUGCUUCUUGAAGAUUCAUACGUCAAU 797

Qy       800 CTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGATGATGTTTCTTTTTTCTTTGCT 859
              :  | ||||:   |||   :::     | || || ||  |  :  | ::::  :::||
Db       798 UUGGACGAAAUCAACGCGUGUUUUUCGCGCGAUGGAGACAAGUUGACCUUUUCUUUUGCA 857

Qy       860 GATGAAAGTACTTTAAATTATAGTCATAAATACAAAAATATCTTGCATTATGTAGTTAAA 919
                || ||:||: : ||::|: |:||:|  :|    ||:|:  :  | :|:|:    |||
Db       858 UCAGAGAGUACUCUUAAUUAUUGUCAUAGUUAUUCUAAUAUUCUUAAGUAUGUGUGCAAA 917

Qy       920 TCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAGGAATTTTTAGTCACTAGGGTT 979
              |::||:: || || :|:| :|||   |:::|| : ||||| :::::||:||| || |::
Db       918 ACUUACUUCCCGGCCUCUAAUAGAGAGGUUUACAUGAAGGAGUUUUUAGUCACCAGAGUU 977

Qy       980 AATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTATATTCTGTACAAGAGTGTTAGA 1039
             ||:|| :||::::|:|| ::: | | | :|||:|| : : :: :|:||||  |:|:
Db       978 AAUACCUGGUUUUGUAAGUUUUCUAGAAUAGAUACUUUUCUUUUGUACAAAGGUGUGGCC 1037

Qy      1040 CAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATGGAAGACGCCTTTGCTTACAAG 1099
             ||   | |    ||:||:|| |||:: :|:   || |:||||||||| :    ::||||
Db      1038 CAUAAAAGUGUAGAUAGUGAGCAGUUUUAUACUGCAAUGGAAGACGCAUGGCAUUACAAA 1097

Qy      1100 AAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTTAGAGACACGGCTTCGGTTAAC 1159
             || ||  : || |:|: |||||  || |||    :| ::   ||  |  | :| |: ||
Db      1098 AAGACUCUUGCAAUGUGCAACAGCGAGAGAAUCCUCCUUGAGGAUUCAUCAUCAGUCAAU 1157

Qy      1160 TTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCGCTGTTTGAGGGTTCTATTACC 1219
             :  :||:: || || |:|| ||| |:||: |: |:|||  : :: ||   ::|: :
Db      1158 UACUGGUUUCCCAAAAUGAGGGAUAUGGUCAUCGUACCAUUAUUCGACAUUUCUUUGGAG 1217

Qy      1220 AGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGTGACTTCGTTTACACAGTGCTT 1279
             |  |  |||| |||  | |  || |:| : |:       || ::||: :  ||||:||::
Db      1218 ACUAGUAAGAGGACGCGCAAGGAAGUCUUAGUGUCCAAGGAUUUCGUGUUUACAGUGCUU 1277

Qy      1280 AATCATATCAGAACATATCAAGCCAAAGCGTTAACTTACCAGAACGTATTATCTTTCGTG 1339
             || || |:  |||||:| || || |||||  : || :||   || |: :: :| :: |:
Db      1278 AACCACAUUCGAACAUACCAGGCGAAAGCUCUUACAUACGCAAAUGUUUUGUCCUUUGUC 1337

Qy      1340 GAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACTGCTAGGTCTGAATGGGATGTA 1399
             || :| |:  ||:|  | |: |: |: || ||:|: || || |||:| |||:||||:|:
Db      1338 GAAUCGAUUCGAUCGAGGGUAAUCAUUAACGGUGUGACAGCGAGGUCCGAAUGGGAUGUG 1397

Qy      1400 GATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTCTTGCAGACTAAGCTGGCTGCG 1459
             || ||| |  :  : ||| ||::|:| |:||| :: : | :||| ||:||||: || |
Db      1398 GACAAAUCUUUGUUACAAUCCUUGUCCAUGACGUUUUACCUGCAUACUAAGCUUGCCGUU 1457

Qy      1460 CTTCAAGACGATATAGTAATGGGAAAGTTTCGGTGCTTGGATAAGACCACTTCTGAACTT 1519
             |:  | || ||  :| : |:  | |||::: |   |      || ||    :   | | :
Db      1458 CUAAAGGAUGACUUACUGAUUAGCAAGUUUAGUCUCGGUUCGAAAACGGUGUGCCAGCAU 1517

Qy      1520 ATTTGGGATGAGGTGGGCAAATTTTTTGGAAACGTTTTCCCCACTATCAAAGAGAGATTG 1579
              : :||||:||| :          :::|| ||||  :: ||| |  : ||||||||  :
Db      1518 GUGUGGGAUGAGAUUUCGCUGGCGUUUGGGAACGCAUUUCCCUCCGUGAAAGAGAGGCUC 1577

Qy      1580 GTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTGAAGATCAAGATCCCAGATCTG 1639
              :|| ||||||| :: :    |:    |   | ||  :  |||:|| | : || ||:|:
Db      1578 UUGAACAGGAAACUUAUCAGAGUGGCAGGCGACGCAUUAGAGAUCAGGGUGCCUGAUCUA 1637

Qy      1640 TATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACCAAGTCTGAGGAGTTACCGCAT 1699
             :|:|: || :   | ||||| :: |:  |:|| :|||     :|:| |||  : ||
Db      1638 UAUGUGACCUUCCACGACAGAUUAGUGACUGAGUACAAGGCCUCUGUGGACAUGCCUGCG 1697

Qy      1700 CTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATGTACGACGCGTTATCAGAATTA 1759
             |: || |: | |||| |  : |||||| | ||    |:|:|| | ||  : :|||| ::|
Db      1698 CUUGACAUUAGGAAGAAGAUGGAAGAAACGGAAGUGAUGUACAAUGCACUUUCAGAGUUA 1757

Qy      1760 TCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAGTTCAAAGACATGTGCAAGGCT 1819
             :|  :  : | ||   |:|| || ::|||: : |     ::     | |:|:|| |  |:
Db      1758 UCGGUGUUAAGGGAGUCUGACAAAUUCGAUGUUGAUGUUUUUCCCAGAUGUGCCAAUCU 1817

Qy      1820 TTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTTGCAGTGGCCGAGAATAGAAGC 1879
             :: || |::   ||      ||||||    |: |: |: || |:       ||:   |||
Db      1818 UUGGAAGUUGACCCAAUGACGGCAGCGAAGGUUAUAGUCGCGGUCAUGAGCAAUGAGAGC 1877

Qy      1880 GGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAATGTGGCTAAGGCTCT------T 1933
             ||: : ||:|: || :::||    || || |||| |||:|: ||    ||: :      :
Db      1878 GGUCUGACUCUCACAUUUGAACGACCUACUGAGGCGAAUGUUGCGCUAGCUUUACAGGAU 1937

Qy      1934 AAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCGACATCCGAAGAGGTGAACGTA 1993
              ||   | ||| :| || |  |   :     ::    | | |   |  || |
Db      1938 CAAGAGAAGGCUUCAGAAGGUGCUUUGGUAGUUACCUCAAGAGAAGUUGAAGAACCGUCC 1997

Qy      1994 AATAAATTTTCTATTGCTGAGAAAGGGAGATTGCCTGTGTGTGCAGAAAGTCATGGTTTG 2053
             |  ||   ::| |: ||      || |  |      |   |:   |   |  |:  :  |
Db      1998 AUGAAGGGUUCGAUGGCCAGAGGAGAGUUACAAUUAGCUGGUCUUGCUGGAGAUCAUCCG 2057

Qy      2054 ACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTCAACGATTTCCATAAGGCTTGC 2113
               |    |  | :   || || ||||| : |||:|  :  |  | :: ||:| |||
Db      2058 GAGUCGUCCUAUUCUAAGAACGAGGAGAUAGAGUCUUUAGAGCAGUUUCAUAUGGCAACG 2117

Qy      2114 GTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTCTACACTGGCTCACTCAAAGTT 2173
             |  ||:    : |::   ||||| |:|   :|| ::|: :|||| ||  |  : ||||::
Db      2118 GCAGAUUCGUUAAUUCGUAAGCAGAUGAGCUCGAUUGUGUACACGGGUCCGAUUAAAGUU 2177

Qy      2174 CAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCGTTGTCCGCCACTGTATCAAAT 2233
             || ||||:||| |||: : : || ||  :|| ||| :|  : :| ||  | |: :| ||:
Db      2178 CAGCAAAUGAAAAACUUUAUCGAUAGCCUGGUAGCAUCACUAUCUGCUGCGGUGUCGAAU 2237

Qy      2234 CTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCTGATTCCAGGGAGAAAGTTGGT 2293
             |:   ||||   |: || ||:  ||  |    :||   :||  || |  | ||  ::||
Db      2238 CUCGUCAAGAUCCUCAAAGAUACAGCUGCUAUUGACCUUGAAACCCGUCAAAAGUUUGGA 2297

Qy      2294 GTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCTGCGGCCAAAGGTCATTCATGG 2353
             |: : |||:|:  | :  |  |||:|| :  :||||||  |||||||  |:||: ||:||
Db      2298 GUCUUGGAUGUUGCAUCUAGGAAGUGGUUAAUCAAACCAACGGCCAAGAGUCAUGCAUGG 2357

Qy      2354 GGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCACTTCTATCTTATGAAGGAGAT 2413
             || |::|:        ||  | ||||      :   || |:: :    :|:|| |   |
Db      2358 GGUGUUGUUGAAACCCACGCGAGGAAGUAUCAUGUGGCGCUUUUGGAAUAUGAUGAGCAG 2417

Qy      2414 AGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTATCATCTGATACAATGGTATAT 2473
              |  :||:|||       || :|||| || |: ||:|:    :|:||  |  : |: :|:
Db      2418 GGUGUGGUGACAUGCGAUGAUUGGAGAAGAGUAGCUGUCAGCUCUGAGUCUGUUGUUUAU 2477

Qy      2474 TCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATGAGAGACGGTGAACCCCACGAA 2533
             :| || |: || || |:|  || :|:| | |    :  || |||| ||||| || |
Db      2478 UCCGACAUGGCGAAACUCAGAACUCUGCGCAGACUGCUUCGAAACGGAGAACCGCAUGUC 2537

Qy      2534 CCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGTTGTGGAAAGTACAAAGGAGAT 2593
               :|  |||||| : |: |::|:||| || |: || || :|:|| ||   ||||| |  :
Db      2538 AGUAGCGCAAAGGUUGUUCUUGUGGACGGAGUUCCGGGCUGUGGAAAACCAAAGAAAUU 2597

Qy      2594 TTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTTCCTGGAAAACAAGCTGCTGCT 2653
              ::   ||  :: |: ::||:|| ||: : |: :: |: ||:|| || ||||| || |
Db      2598 CUUUCCAGGGUUAAUUUUGAUGAAGAUCUAAUUUUAGUACCUGGGAAGCAAGCCGCGGAA 2657

Qy      2654 ATGATCAGAAGAAGGGCTAATTCATCTGGACTGATAAGAGCCACAATGGACAATGTGAGA 2713
             |:||:||||||| | || ||::| :| ||  : |:    ||||| | |||||| |: | |
Db      2658 AUGAUCAGAAGACGUGCGAAUUCCUCAGGGAUUAUUGUGGCCACGAAGGACAACGUUAAA 2717
```

```
Qy   2714 ACGGTAGATTCACTTCTAATGCAT---------CCAAAACCGCGATCACACAAGAGGCTT 2764
          || |: ||::|  :  : |:| |:            | ||   |      ||||||| :
Db   2718 ACCGUUGAUUCUUUCAUGAUGAAUUUUGGGAAAAGCACACGCUGUCAGUUCAAGAGGUUA 2777

Qy   2765 TTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTTAACTTCCTGGTGCTTATCTCT 2824
          :: |::||:||||||::||:| :||| || ||::|:|::|| :: |: |:|   |: :|
Db   2778 UUCAUUGAUGAAGGGUUGAUGUUGCAUACUGGUUGUGUUAAUUUUCUUGUGGCGAUGUCA 2837

Qy   2825 GGTTGCGACATCGCATACATTTACGGAGATACACAGCAGATTCCTTTCATTAACAGAGTT 2884
             :|||| |: |||:|  :::||||||| ||||||||||::|| : ||: || ||||::
Db   2838 UUGUGCGAAAUUGCAUAUGUUUACGGAGACACACAGCAGAUUCCAUACAUCAAUAGAGUU 2897

Qy   2885 CAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAAGTGGATGAAGTTGAGATGAGG 2944
                ::||||:| |||   ||::::|  ||  :| |||: || || |: ||||   |
Db   2898 UCAGGAUUCCCGUACCCCGCCCAUUUUGCCAAAUUGGAAGUUGACGAGGUGGAGACACGC 2957

Qy   2945 AGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTCCTACAATCGAAGTACGAAGGA 3004
          || || || |:  | :| ||||  ||:|: |    ::  |:  |   ||  :| || ||
Db   2958 AGAACUACUCUCCGUUGUCCAGCCGAUGUCACACAUUAUCUGAACAGGAGAUAUGAGGGC 3017

Qy   3005 GCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCATCTGAGATGATAGGCGGTAAG 3064
             |: |  | |||::|  | |:  ||   :| |: :|    ||||:| : |||||
Db   3018 UUUGUCAUGAGCACUUCUUCGGUUAAAAAGUCUGUUUCGCAGGAGAUGGUCGGCGGAGCC 3077

Qy   3065 GGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGGAAAATTGTAACTTTCACTCAGGCT 3124
          |  |:  : ||     : :| |||||  :  | || || |:  : ||::: || ||  |
Db   3078 GCCGUGAUCAAUCCGAUCUCAAAACCCUUGCAUGGCAAGAUCCUGACUUUUACCCAAUCG 3137

Qy   3125 GATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTGAACACCGTTCATGAGATCCAA 3184
          ||:|||   |   :       |  || :|:    |:|:  |||| |: ||:||  : |||
Db   3138 GAUAAAGAAGCUCUGCUUUCAAGAGGGUAUUCAGAUGUUCACACUGUGCAUGAAGUGCAA 3197

Qy   3185 GGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACGGCAACTCCACTGACTCTGATT 3244
          || || || :     ||:|: :| |: |: || :: ||  | || ||| :  |  : |::
Db   3198 GGCGAGACAUACUCUGAUGUUUCACUAGUUAGGUUAACCCCUACACCAGUCUCCAUCAUU 3257

Qy   3245 TCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGACACACAAAGAGCTTCAAATAT 3304
           |         ||| ||:|:: : |:|||  :| | || |||||        :||| :|
Db   3258 GCAGGAGACAGCCCACAUGUUUUGGUCGCAUUGUCAAGGCACACCUGUUCGCUCAAGUAC 3317

Qy   3305 TACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGTGATTTGTCTTCTTTAAGCTCC 3364
          :|||| |: |:  : ||:||:::||:|   |: |::|| ||: :         : |||:|
Db   3318 UACACUGUUGUUAUGGAUCCUUUAGUUAGUAUCAUUAGAGAUCUAGAGAAACUUAGCUCG 3377

Qy   3365 TTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGATAGCAATTACAGATGGATGCA 3424
          : | : ::||| |:|:|:| ||: || ||||| |    |:|||||::|||||: ||  |
Db   3378 UACUUGUUAGAUAUGUAUAAGGUCGAUGCAGGAACACAAUAGCAAUUACAGAUUGACUCG 3437

Qy   3425 GTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAATCAGGAGACTTTCCAGATCTA 3484
          |:|::||||||:   ||:|: :::|: ||| | || ||  | || ||  :: | ||: :
Db   3438 GUGUUCAAAGGUUCCAAUCUUUUUGUUGCAGCGCCAAAGACUGGUGAUAUUUCUGAUAUG 3497

Qy   3485 CAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACTATACTTAACAAGTATGATGCT 3544
          |||:: :| :| ||:   :| |:||| || || || || |:  : || || : :||:||:
Db   3498 CAGUUUUACUAUGAUAAGUGUCUCCCAGGCAACAGCACCAUGAUGAAUAAUUUUGAUGCU 3557

Qy   3545 GTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAGGATTGTGTTCTTGATTTTTCC 3604
          |::||||:||||::   :|| | :    : ||:|: || ||::|  :  : ||: : :|
Db   3558 GUUACCAUGAGGUUGACUGACAUUUCAUUGAAUGUCAAAGAUUGCAUAUUGGAUAUGUCU 3617

Qy   3605 AAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTAGAGCCAGTTTTGCGTACCGCG 3664
          ||   : :: |   ||| |||||    |    |   |:|   ||  :  : || || |||
Db   3618 AAGUCUGUUGCUGCGCCUAAGGAUCAAAUCAAACCACUAAUACCUAUGGUACGAACGGCG 3677

Qy   3665 GCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTGGTTGCAATGATTAAAAGAAAT 3724
          || |||  ||| |     | ||||:| : |||||: : |: || |:||::||||| ||
Db   3678 GCAGAAAUGCCACGCCAGACUGGACUAUUGGAAAAUUUAGUGGCGAUGAUUAAAAGGAAC 3737

Qy   3725 TTCAACGCACCAGACCTGACGGGGACGATTGACATTGAGAGCACCGCATCTGTTGTAGTA 3784
          :: |||||||| ||  :| | || |  |::|| |::|| |  || |||:|: : |: |:|
Db   3738 UUUAACGCACCCGAGUUGUCUGGCAUCAUUGAUAUUGAAAAUACUGCAUCUUUAGUUGUA 3797

Qy   3785 GATAAGTTTTTTGATAGCTATTTTATTAAAAAAGAAAAATACACAAAAAATATTGCTGGA 3844
          ||:|||::::::||:|| :|:::  ::||| || ||| | |  |||| ||  | :| :
Db   3798 GAUAAGUUUUUUGAUAGUUAUUUGCUUAAAGAAAAAAGAAAACCAAAUAAAAAUGUUUCU 3857

Qy   3845 GTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAACAGGAAAGAAGTACTATTGGAC 3904
           :| : |  |  || :|  : |  |||:||:: |||||   | || | |:|  | : | |
Db   3858 UUGUUCAGUAGAGAGUCUCUCAAUAGAUGGUUAGAAAAGCAGGAACAGGUAACAAUAGGC 3917

Qy   3905 GACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATCGATCAGTACAAGCACATGATC 3964
           |  : ||  | :   |::::  |||: :||| ||  : ||:|||:|||  ||||:||:
Db   3918 CAGCUCGCAGAUUUUGAUUUUGUAGAUUUGCCAGCAGUUGAUCAGUACAGACACAUGAUU 3977

Qy   3965 AAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAGAATGAATACCCTGCTCTGCAA 4024
          || || ||||| || || |||::||||  ::|||: || |  || :|||| ||: :|||
Db   3978 AAAGCACAACCCAAGCAAAAAUUGGACACUUCAAUCCAAACGGAGUACCCGGCUUUGCAG 4037

Qy   4025 ACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTGGCCGGTTTCTCA---GAGCTT 4081
          || |::|: :||||::| ||  |||:||| |  |: :: | |   :: :     ||||::
Db   4038 ACGAUUGUGUACCAUUCAAAAAAGAUCAAUGCAAUAUUUGGCCCGUUGUUUAGUGAGCUU 4097

Qy   4082 ACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTTCTTTTCTTTACTAGGAAAACT 4141
          || |||    : |: ||     ::||::| |  |  ::: : :: :: || || || ||
Db   4098 ACUAGGCAAUUACUGGACAGUGUUGAUUCGAGCAGAUUUUUGUUUUUCACAAGAAAGACA 4157

Qy   4142 CCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCGCACGTTCCTATGGATGTGTTA 4201
          ||||  ||||:: | ||  :: ::|   ||:|:||||   || |: || |:|||:|: ::
Db   4158 CCAGCGCAGAUUGAGGAUUUCUUCGGAGAUCUCGACAGUCAUGUGCCGAUGGAUGUCUUG 4217

Qy   4202 GAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAGTTTCATTGTGCTGTAGAGTAT 4261
          || |:|||:|: :| || :| || || :| ||||| || :: || :|:|| |:||| :|
Db   4218 GAGCUGGAUAUAUCAAAAUACGACAAAUCUCAGAAUGAAUUCCACUGUGCAGUAGAAUAC 4277

Qy   4262 GAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCCGAAGTGTGGAAACAAGGGCAC 4321
          || |: :||  ||||::|||: :  | ||  :: ::||  |||: :|||||||||||||
Db   4278 GAGAUCUGGCGAAGAUUGGGUUUUGAAGACUUCUUGGGAGAAGUUUGGAAACAAGGGCAU 4337

Qy   4322 AGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAGACATGTCTGTGGTATCAAAGG 4381
          || || || ||  : |||||::| |  || |||   || || :|  : :||:|:|||||
Db   4338 AGAAAGACCACCCUCAAGGAUUAUACCGCAGGUAUAAAAACUUGCAUCUGGUAUCAAAGA 4397

Qy   4382 AAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTTATAATAGCAGCTTGCTTGGGT 4441
          || ||||| || |: || ||  ::||: || || ||:|: |: |: || || :| ::||
Db   4398 AAGAGCGGGGACGUCACGACGUUCAUUGGAAACACUGUGAUCAUUGCUGCAUGUUUGGCC 4457

Qy   4442 TCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTTTGTGGAGACGATTCCGTTTTG 4501
          :| |:| : ||||:||| ||  : |: |||||| || ::::| || |||||:    :  :|
Db   4458 UCGAUGCUUCCGAUGGAGAAAAUAAUCAAAGGAGCCUUUUGCGGUGACGAUAGUCUGCUG 4517

Qy   4502 TATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCATGTGCTAATCTCATGTGGAAT 4561
          :| :::||||||||::  || :: || ||  : ||    :  || ||:|: |:|:||||:
Db   4518 UACUUUCCAAAGGGUUGUGAGUUUCCGGAUGUGCAACACUCCGCGAAUCUUAUGUGGAAU 4577

Qy   4562 TTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTTTGTGGTAGATACATCATACAC 4621
          :::|| || ||||:|: :| |||   |:| || :||::::| || |||:|  : |:|||
Db   4578 UUUGAAGCAAAACUGUUUAAAAAACAGUAUGGAUACUUUUGCGGAAGAUAUGUAAUACAU 4637

Qy   4622 CATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAGTTGATCTCCAAACTTGGGGCA 4681
          || || |  |||   |: |:|:|::| ||:||  : |||::||:|:| ||||::|| ||
Db   4638 CACGACAGAGGAUGCAUUGUGUAUUACGAUCCCCUAAAGUUGAUCUCGAAACUUGGUGCU 4697

Qy   4682 AAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGGGTGTCTTTGTGCGATGTTGCT 4741
          ||||| |:||||||::  || |||:: || |||:: ||   |:|: : :| ||:|::||:
Db   4698 AAACACAUCAAGGAUUGGGAACACUUGGAGGAGUUCAGAAGGUCUCUUUGUGAUGUUGCU 4757

Qy   4742 TGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTGAACGCAGCTATCAAGGAGGTT 4801
            ::|| :     |||   :|       :   | ||| :| |||  ||: :   |||||::
Db   4758 GUUUCGUU---GAACAAUUGUGCGUAUUACACACAGUUGGACGACGCUGUAUGGGAGGUU 4814

Qy   4802 CATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGTGTTAACAAATTTTTGTGTGAT 4861
          ||:|| |||||   :   ||::||:::| :: :||  |: :    || : :::|: :||:
Db   4815 CAUAAGACCGCCCCUCCAGGUUCGUUUGUUUAUAAAAGUCUGGUGAAGUAUUUGUCUGAU 4874

Qy   4862 AAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAGTCTCAGAGATACTGTCAAAAT 4921
```

```
                |||  ::  :  :::||||  :::|:::  :| |:|||:  :   :  :  | ||  |   |:  ||  |:
Db         4875 AAAGUUCUUUUUAGAAGUUUGUUUAUAGAUGGCUCUAGUUGUUAAAGGAAAAGUGAAUAU 4934

Qy         4922 TAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACTTCCGGCATTCATGACTAAGGT 4981
                 |  |||:: |: || |:  | |||  |||  |||:  : ||| |  :  : ||    |:
Db         4935 CAAUGAGUUUAUCGACCUGACAAAAAUGGAGAAGAUCUUACCGUCGAUGUUUACCCCUGU 4994

Qy         4982 CAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGCTGTTAAGAATGATAGTCTTTC 5041
                 |||||:|::|     :| |  |: || || |: |:|| :  : ||||:||     : :|
Db         4995 AAAGAGUGUUAUGUGUUCCAAAGUUGAUAAAAUAAUGGUUCAUGAGAAUGAGUCAUUGUC 5054

Qy         5042 TGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAAAGGGTATGTGTGCTTAGCTGA 5101
                 || |:  |  : |::||||| |::||| :  :: | |  || :| |: :| ::||| | 
Db         5055 AGAGGUGAACCUUCUUAAAGGAGUUAAGCUUAUUGAUAGUGGAUACGUCUGUUUAGCCGG 5114

Qy         5102 TTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTGCCGTGGTGGTGTCAGTGTTTG 5161
                :::||: |:  | || |||:||||  : || || || :|| | || ||:|: || |: :|
Db         5115 UUUGGUCGUCACGGGCGAGUGGAACUUGCCUGACAAUUGCAGAGGAGGUGUGAGCGUGUG 5174

Qy         5162 TATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAACGCTGGGTGCGTATCACGCCCC 5221
                : : |: || || || |:| ||||     | || || || |: ||  | :|  || |  |
Db         5175 UCUGGUGGACAAAAGGAUGGAAAGAGCCGACGAGGCCACUCUCGGAUCUUACUACACAGC 5234

Qy         5222 TGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAATTATTCAATAACATCCGAGGA 5281
                 ||:   || || |  :::   :: ||| :  : || ||::|: | |:|||  || ||||
Db         5235 AGCUGCAAAGAAAAGAUUUCAGUUCAAGGUCGUUCCCAAUUAUGCUAUAACCACCCAGGA 5294

Qy         5282 TGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAAAGGAGTGGCTATGGAAGAAGG 5341
                 ||   |||  ||   :||||||: ::||: ||:|: | |   |:|   |:|  ||  ||
Db         5295 CGCGAUGAAAAACGUCUGGCAAGUUUUAGUUAAUAUUAGAAAUGUGAAGAUGUCAGCGGG 5354

Qy         5342 ATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGTAGTACATAAAAATAATGTAAG 5401
                 : |:|:||  : :|: :||||:: |: :|  : :|: : |:  |:| |||:||: :|| 
Db         5355 UUUCUGUCCGCUUUCUCUGGAGUUUGUGUCGGUGUGUAUUGUUUAUAGAAAUAAUAUAAA 5414

Qy         5402 AAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGGCTCGCCAATTGAACTCACTGA 5461
                |  |||:::||| ||    |::   |  |:|| ||||||   ||| |: ||||: || ||
Db         5415 AUUAGGUUUGAGAGAGAAGAUUACAAACGUGAGAGACGGAGGGCCCAUGGAACUUACAGA 5474

Qy         5462 AAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGCTGTGAAACTCGAAAAGGTTC- 5520
                | | |: |::|| |||::| :||| || |: || |:| |  : |  |: | |||| ::| 
Db         5475 AGAAGUCGUUGAUGAGUUCAUGGAAGAUGUCCCUAUGUCGAUCAGGCUUGCAAAGUUUCG 5534

Qy         5521 -----------CGGAAAACAAAAAAGAAATGGTAGGTAATAATGTTAATAAT-------- 5561
                              |||| |   | |       ||| || ||:  :| :||:
Db         5535 AUCUCGAACCGGAAAAAAGAGUGAUGUCCGCAAAGGGAAAAAUAGUAGUAAUGAUCGGUC 5594

Qy         5562 -------AAGAAAATAAATAACAGTGGTAAGAAGGGTTTTAAAATTGAGGAAATTGAGGA 5614
                       || || |   |:|  | :| :||| |   :     ||:       |   || |
Db         5595 AGUGCCGAACAAGAACUAUAGAAAUGUUAAGGAUUUUGGAGGAAUGAGUUUUAAAAAGAA 5654

Qy         5615 TAATGTAAGTGATGACGAGT---------CTATCGCGTCATCGAGTACGTTTTAATCAAT 5665
                :||: :||  ||:|| || :         |: :|||   |:||  : ||::::|   ||:
Db         5655 UAAUUUAAUCGAUGAUGAUUCGGAGGCUACUGUCGCCGAAUCGGAUUCGUUUUA---AAU 5711

Qy         5666 ATGCCTTATACAATCAACTCTCCGAGCCAATTTGTTTACTTATCTTCCGCTTACGCAGAT 5725
                |:| |::| |  |:||   |:||    || :: |: : |:: :| :| || :  || || 
Db         5712 AUGUCUUACAGUAUCACUACUCCAUCUCAGUUCGUGUUCUUGUCAUCAGCGUGGGCCGAC 5771

Qy         5726 CCTGTGCAGCTGATCAATCTGTGTACAAATGCATTGGGTAACCAGTTTCAAACGCAACAA 5785
                ||  :  || : |: ||: : :|:|| ||:|| :: || || |||:::||||| ||||||
Db         5772 CCAAUAGAGUUAAUUAAUUUAUGUACUAAUGCCUUAGGAAAUCAGUUUCAAACACAACAA 5831

Qy         5786 GCTAGGACAACAGTCCAACAGCAATTTGCGGATGCCTGGAAACCTGTGCCTAGTATGACA 5845
                ||: | ||    |: |||   |||::    || |  :|||||||:   ||     : || 
Db         5832 GCUCGAACUGUCGUUCAAAGACAAUUCAGUGAGGUGUGGAAACCUUCACCACAAGUAACU 5891

Qy         5846 GTGAGATTTCCTGCATCGGAT------------------------------TTCTATGTG 5875
                |: || :: ||:|||   ||:                              ::  | |:|
Db         5892 GUUAGGUUCCCUGCAGGCGAUCGGGCUGGUGACCGUGCAGGAGACAGAGACUUUAAGGUG 5951

Qy         5876 TATAGATATAATTCGACGCTTGATCCGTTGATCACGGCGTTATTAAATAGCTTTGATACT 5935
                :| || :| ||: ||    : || ||| :  :||| ||  : ::|  :   :: || ||:
Db         5952 UACAGGUACAAUGCGGUAUUAGACCCGCUAGUCACAGCACUGUUAGGUGCAUUCGACACU 6011

Qy         5936 AGAAATAGAATAATAGAGGTTGATAATCAACCCGCACCGAATACTACTGAAATCGTTAAC 5995
                |||||:||||:||:||| |::|| ||:||  |    || |  ||: | ||||   :  | 
Db         6012 AGAAAUAGAAUAAUAGAAGUUGAAAAUCAGGCGAACCCCACGACUGCCGAAACGUUAGAU 6071

Qy         5996 GCGACTCAGAGGGTAGACGATGCTACTGTAGCTATAAGGGCTTCAATCAATAATTTGGCT 6055
                || ||:|  || |:|||||| || || |: || |:||||    | |: ||:||:::    
Db         6072 GCUACUCGUAGAGUAGACGACGCAACGGUGGCCAUAAGGAGCGCGAUAAAUAAUUUAAUA 6131

Qy         6056 AATGAACTGGTTCGTGGAACTGGCATGTTCAATCAAGCAGGCTTTGAGACTGCTAGTGGA 6115
                   ||| :| :  | ||||| ||    :  ||:|        :: ||||   |:  :|| 
Db         6132 GUAGAAUUGAUCAGAGGAACCGGAUCUUAUAAUCGGAGCUCUUUCGAGAGCUCUUCUGGU 6191

Qy         6116 CTTGTCTGGACCACAACTCCGGCTACTTAGCTATTGTTGTGAGATTTCCTAAAATAAAGT 6175
                 : |: :||||||| |   :|| || ||:    :   |: |: |   : | :|| | |  
Db         6192 UUGGUUUGGACCUCUGGUCCUGCAACU----UGAGGUAGUCAAGAUGCAUAAUAAAUAAC 6247

Qy         6176 CGCTGAAGACTTAAAATTCAGGGTGGCTGATACCAAAATCAGCAGTGGTTGTTCGTCCAC 6235
                 | :   | |   ||   ||  |:||    :|| | ||     ||:| :: : | :||||
Db         6248 GGAUUGUGUCCGUAAUCACA-CGUGGUGCGUACGAUAACGCAUAGUGUUUUUCCCUCCAC 6306

Qy         6236 TTAAATATAACGATTGTCATATCTGGATCCAACAGTTAAACCATGTGATGGTGTATACTG 6295
                ::|||:  || | ::|:  : :  |    |    |: |||             :|:||
Db         6307 UUAAAUCGAAGGGUUGU-GUCUUGGAUCGCGCGGGUCAAAUGUAUAUGGUUCAUAUACAU 6365

Qy         6296 TGGTATGGCGTAAAACATCGGAGAGGTTCGAATCCTCCCCTAACCGCCGGTAGCGGCCCA 6355
                  | | |     ||  |   ||| ||::||||:|| ||| : ||| ||||:|| ||||||
Db         6366 CCGCAGGCACGUAAUAAAGCGAGGGGUUCGAAUCCCCCCGUUACCCCCGGUAGGGGCCCA 6425


RESULT 13
US-10-679-620-73
; Sequence 73, Application US/10679620
; Publication No. US20040110930A1
; GENERAL INFORMATION:
;  APPLICANT: Large Scale Biology
;  APPLICANT:  Reinl, Stephen J.
;  APPLICANT:  Edwards, Patricia C.
;  TITLE OF INVENTION: MULTIMERIC PROTEIN ENGINEERING
;  FILE REFERENCE: 34150-004A
;  CURRENT APPLICATION NUMBER: US/10/679,620
;  CURRENT FILING DATE:  2003-10-03
;  PRIOR APPLICATION NUMBER: 60/415,940
;  PRIOR FILING DATE: 2002-10-03
;  NUMBER OF SEQ ID NOS: 122
;  SOFTWARE: PatentIn version 3.2
; SEQ ID NO 73
;   LENGTH: 11222
;   TYPE: DNA
;   ORGANISM: Artificial Sequence
;   FEATURE:
;   OTHER INFORMATION: pLSBC1741 , see Example 13
US-10-679-620-73

  Query Match             36.1%;  Score 2291.4;  DB 19;  Length 11222;
  Best Local Similarity   64.0%;  Pred. No. 0;
  Matches 3532;  Conservative    0;  Mismatches 1966;  Indels   21;  Gaps    4;

Qy           20 ACAACAACAATTAAAACAAAAACAACATATTACAAACAACAAACAACAACAATGGCACAC 79
                || |  |  |  |||  | |||||||||   |   || | |  ||||  ||||||||| ||
Db           18 ACCAACAACAACAAACAACAAACAACATTACAATTACTATTTACAATTACAATGGCATAC 77

Qy           80 ATACAATCTATAATTAGCAACGCCCTTCTTGAAAGCGTGAGTGGTAAAAACACTCTCGTT 139
                | |||  |    |  |     ||  | || || |  ||  | || || ||| |  | || 
Db           78 ACACAGACAGCTACCACATCAGCTTTGCTGGACACTGTCCGAGGAAACAACTCCTTGGTC 137

Qy          140 AATGACCTTGCAAGAAGGCGCATGTACGATACGGCCGTGGAAGAATTTAACGCCCGCGAC 199
                ||||| || ||||   | ||  | ||||| || || || ||||| |||||||| || |||
Db          138 AATGATCTAGCAAAGCGTCGTCTTTACGACACAGCGGTTGAAGAGTTTAACGCTCGTGAC 197

Qy          200 CGTAGACCAAAGGTCAACTTTTCCAAAACTATTAGCGAAGAGCAAACGCTTCTAGTCTCC 259
                || || || ||||| |||||||| |||   || ||||| ||||| |||||| | |   ||
```

```
Db      198 CGCAGGCCCAAGGTGAACTTTTCAAAAGTAATAAGCGAGGAGCAGACGCTTATTGCTACC 257

Qy      260 AACGCGTACCCGGAGTTCCAGATTACCTTTTATAATACTCAAAATGCCGTACACAGTTTG 319
               ||||| || || ||||| ||||| |||||||| || ||||||||||| ||     |
Db      258 CGGGCGTATCCAGAATTCCAAATTACATTTTATAACACGCAAAATGCCGTGCATTCGCTT 317

Qy      320 GCTGGAGGTTTGAGAGCATTAGAATTGGAATATCTGATGCTACAAGTTCCCTATGGATCG 379
            || || || ||| || | |||||| |||||||||||||| | ||| ||||||| |||||
Db      318 GCAGGTGGATTGCGATCTTTAGAACTGGAATATCTGATGATGCAAATTCCCTACGGATCA 377

Qy      380 CCGACATATGATATAGGTGGGAACTTTGCAGCACATTTGTTCAAAGGCAGGGATTACGTG 439
              ||| ||||| ||||| ||||| |||||| | ||| ||||||| ||  | |  || ||
Db      378 TTGACTTATGACATAGGCGGGAATTTTGCATCGCATCTGTTCAAGGGACGAGCATATGTA 437

Qy      440 CATTGCTGTATGCCCAATCTGGACATACGAGATATAATGAGGCACGAAGGACAAAAGGAC 499
            || |||||||||||||| |||||| | ||||| || ||| |||||||||| || || |||
Db      438 CACTGCTGTATGCCCAACCTGGACGTTCGAGACATCATGCGGCACGAAGGCCAGAAAGAC 497

Qy      500 TCAATTGAGATGTATTTGTCCAGATTGTCTCGTTCTAACAAGGTAATTCCTGAGTTTCAA 559
               |||||  | ||  | || ||  |     |       ||   | | ||  | || |||
Db      498 AGTATTGAACTATACCTTTCTAGGCTAGAGAGAGGGGGGAAAACAGTCCCCAACTTCCAA 557

Qy      560 AGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAAGTCTGCTGCTCTAAAACTTTT 619
            | ||| || ||| |||| || ||||||  |||  | || |    |||    || |||||
Db      558 AAGGAAGCATTTGACAGATACGCAGAAATTCCTGAAGACGCTGTCTGTCACAATACTTTC 617

Qy      620 CAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGAAGATACGCTGTTGCTCTGCAC 679
            |||      |||   || |||    || |    || |||   || ||  |||| || |||
Db      618 CAGACAATGCGACATCAGCCGATGCAGCAATCAGGCAGAGTGTATGCCATTGCGCTACAC 677

Qy      680 AGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCGTTAATATCTAAGAATATACAT 739
            ||  | ||||| || || |   ||||||| || || ||  |  |    || ||| | |||
Db      678 AGCATATATGACATACCAGCCGATGAGTTCGGGGCGGCACTCTTGAGGAAAAATGTCCAT 737

Qy      740 GTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTACTAGACCAGACGGAGGTTACG 799
               || ||||| |||| |   ||  | ||     |  | || ||  |  |  | || |
Db      738 ACGTGCTATGCCGCTTTCCACTTCTCTGAGAACCTGCTTCTTGAAGATTCATACGTCAAT 797

Qy      800 CTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGATGATGTTTCTTTTTTCTTTGCT 859
             |  | |||||   |||   |||     | || || ||  |  |  | ||||  |||||
Db      798 TTGGACGAAATCAACGCGTGTTTTTCGCGCGATGGAGACAAGTTGACCTTTTCTTTTGCA 857

Qy      860 GATGAAAGTACTTTAAATTATAGTCATAAATACAAAAATATCTTGCATTATGTAGTTAAA 919
               || |||||| | |||||| ||||||  ||    |||||  |  | |||||    |||
Db      858 TCAGAGAGTACTCTTAATTATTGTCATAGTTATTCTAATATTCTTAAGTATGTGTGCAAA 917

Qy      920 TCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAGGAATTTTTAGTCACTAGGGTT 979
             ||||||| || || |||| ||||   |||||| | ||||| ||||||||||| || |||
Db      918 ACTTACTTCCCGGCCTCTAATAGAGAGGTTTACATGAAGGAGTTTTTAGTCACCAGAGTT 977

Qy      980 AATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTATATTCTGTACAAGAGTGTTAGA 1039
            ||||| ||||||||||| ||| | | | ||||||| | | || |||||||  ||||
Db      978 AATACCTGGTTTTGTAAGTTTTCTAGAATAGATACTTTTCTTTTGTACAAAGGTGTGGCC 1037

Qy     1040 CAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATGGAAGACGCCTTTGCTTACAAG 1099
            ||   | |    |||||||| ||||| |||   || ||||||||||| |    ||||||
Db     1038 CATAAAAGTGTAGATAGTGAGCAGTTTTATACTGCAATGGAAGACGCATGGCATTACAAA 1097

Qy     1100 AAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTTAGAGACACGGCTTCGGTTAAC 1159
            || ||  | || |||| |||||  || |||    || ||   ||  |  | || || ||
Db     1098 AAGACTCTTGCAATGTGCAACAGCGAGAGAATCCTCCTTGAGGATTCATCATCAGTCAAT 1157

Qy     1160 TTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCGCTGTTTGAGGGTTCTATTACC 1219
            |  ||||| || || |||| ||| ||||| || |||||  | || ||   |||| |
Db     1158 TACTGGTTTCCCAAAATGAGGGATATGGTCATCGTACCATTATTCGACATTTCTTTGGAG 1217

Qy     1220 AGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGTGACTTCGTTTACACAGTGCTT 1279
            |  |  |||| |||  | |  || ||| | ||       || ||||| |  |||||||||
Db     1218 ACTAGTAAGAGGACGCGCAAGGAAGTCTTAGTGTCCAAGGATTTCGTGTTTACAGTGCTT 1277

Qy     1280 AATCATATCAGAACATATCAAGCCAAAGCGTTAACTTACCAGAACGTATTATCTTTCGTG 1339
            || || ||  ||||||| || || |||||  | || |||   || || || || || ||
Db     1278 AACCACATTCGAACATACCAGGCGAAAGCTCTTACATACGCAAATGTTTTGTCCTTTGTC 1337

Qy     1340 GAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACTGCTAGGTCTGAATGGGATGTA 1399
            || || ||  ||||  | || || || || ||||| || || ||||| |||||||||||
Db     1338 GAATCGATTCGATCGAGGGTAATCATTAACGGTGTGACAGCGAGGTCCGAATGGGATGTG 1397

Qy     1400 GATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTCTTGCAGACTAAGCTGGCTGCG 1459
            || ||| |  |  | ||| ||||||| ||||| || | | |||| |||||||| || |
Db     1398 GACAAATCTTTGTTACAATCCTTGTCCATGACGTTTTACCTGCATACTAAGCTTGCCGTT 1457

Qy     1460 CTTCAAGACGATATAGTAATGGGAAAGTTTCGGTGCTTGGATAAGACCACTTCTGAACTT 1519
            ||  | || ||  || | ||  | |||||| |   |      || ||    |   | | |
Db     1458 CTAAAGGATGACTTACTGATTAGCAAGTTTAGTCTCGGTTCGAAAACGGTGTGCCAGCAT 1517

Qy     1520 ATTTGGGATGAGGTGGGCAAATTTTTTGGAAACGTTTTCCCCACTATCAAAGAGAGATTG 1579
             | ||||||||| |          ||||| ||||  || ||| |  | ||||||||  |
Db     1518 GTGTGGGATGAGATTTCGCTGGCGTTTGGGAACGCATTTCCCTCCGTGAAAGAGAGGCTC 1577

Qy     1580 GTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTGAAGATCAAGATCCCAGATCTG 1639
             ||| ||||||| || |    ||    |   | ||  |  |||||| | | || |||||
Db     1578 TTGAACAGGAAACTTATCAGAGTGGCAGGCGACGCATTAGAGATCAGGGTGCCTGATCTA 1637

Qy     1640 TATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACCAAGTCTGAGGAGTTACCGCAT 1699
            ||||| || |   | ||||| || ||  |||| ||||     |||| |||  | ||
Db     1638 TATGTGACCTTCCACGACAGATTAGTGACTGAGTACAAGGCCTCTGTGGACATGCCTGCG 1697

Qy     1700 CTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATGTACGACGCGTTATCAGAATTA 1759
            || || || | |||| |  | |||||| | ||    |||||| | ||  | ||||| |||
Db     1698 CTTGACATTAGGAAGAAGATGGAAGAAACGGAAGTGATGTACAATGCACTTTCAGAGTTA 1757

Qy     1760 TCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAGTTCAAAGACATGTGCAAGGCT 1819
            ||  |  | | ||   |||| || |||||| | |     ||     | |||||| |  ||
Db     1758 TCGGTGTTAAGGGAGTCTGACAAATTCGATGTTGATGTTTTTTCCCAGATGTGCCAATCT 1817

Qy     1820 TTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTTGCAGTGGCCGAGAATAGAAGC 1879
            || || |||   ||      ||||||    || || || || ||       |||   |||
Db     1818 TTGGAAGTTGACCCAATGACGGCAGCGAAGGTTATAGTCGCGGTCATGAGCAATGAGAGC 1877

Qy     1880 GGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAATGTGGCTAAGGCTCT------T 1933
            ||| | ||||| || |||||    || || |||| |||||| ||   |||| |      |
Db     1878 GGTCTGACTCTCACATTTGAACGACCTACTGAGGCGAATGTTGCGCTAGCTTTACAGGAT 1937

Qy     1934 AAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCGACATCCGAAGAGGTGAACGTA 1993
             ||   | ||| || || |  |   |     ||    | | |   |  || |
Db     1938 CAAGAGAAGGCTTCAGAAGGTGCTTTGGTAGTTACCTCAAGAGAAGTTGAAGAACCGTCC 1997

Qy     1994 AATAAATTTTCTATTGCTGAGAAAGGGAGATTGCCTGTGTGTGCAGAAAGTCATGGTTTG 2053
            |  ||   ||| || ||      || |  |      |   ||   |   |  ||  |  |
Db     1998 ATGAAGGGTTCGATGGCCAGAGGAGAGTTACAATTAGCTGGTCTTGCTGGAGATCATCCG 2057

Qy     2054 ACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTCAACGATTTCCATAAGGCTTGC 2113
              |    |  | |   || || ||||| | |||||  |  |  | || |||| |||
Db     2058 GAGTCGTCCTATTCTAAGAACGAGGAGATAGAGTCTTTAGAGCAGTTTCATATGGCAACG 2117

Qy     2114 GTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTCTACACTGGCTCACTCAAAGTT 2173
            |  |||    | |||   ||||| |||   ||| |||| ||||| ||  |  | ||||||
Db     2118 GCAGATTCGTTAATTCGTAAGCAGATGAGCTCGATTGTGTACACGGGTCCGATTAAAGTT 2177

Qy     2174 CAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCGTTGTCCGCCACTGTATCAAAT 2233
            || |||||||| |||| | | || ||  ||| ||| ||  | || ||  | || || |||
Db     2178 CAGCAAATGAAAAACTTTATCGATAGCCTGGTAGCATCACTATCTGCTGCGGTGTCGAAT 2237

Qy     2234 CTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCTGATTCCAGGGAGAAAGTTGGT 2293
            ||   ||||   || || |||  ||  |    |||   |||  || |  | ||  ||||
Db     2238 CTCGTCAAGATCCTCAAAGATACAGCTGCTATTGACCTTGAAACCCGTCAAAAGTTTGGA 2297

Qy     2294 GTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCTGCGGCCAAAGGTCATTCATGG 2353
            || | ||||||  | |  |  |||||| |  |||||||  |||||||  ||||| |||||
Db     2298 GTCTTGGATGTTGCATCTAGGAAGTGGTTAATCAAACCAACGGCCAAGAGTCATGCATGG 2357

Qy     2354 GGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCACTTCTATCTTATGAAGGAGAT 2413
            || |||||        ||  | ||||      |   || ||| |    ||||| |   |
Db     2358 GGTGTTGTTGAAACCCACGCGAGGAAGTATCATGTGGCGCTTTTGGAATATGATGAGCAG 2417
```

```
Qy        2414 AGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTATCATCTGATACAATGGTATAT 2473

Db        2418 GGTGTGGTGACATGCGATGATTGGAGAAGAGTAGCTGTCAGCTCTGAGTCTGTTGTTTAT 2477

Qy        2474 TCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATGAGAGACGGTGAACCCCACGAA 2533

Db        2478 TCCGACATGGCGAAACTCAGAACTCTGCGCAGACTGCTTCGAAACGGAGAACCGCATGTC 2537

Qy        2534 CCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGTTGTGGAAAGTACAAAGGAGAT 2593

Db        2538 AGTAGCGCAAAGGTTGTTCTTGTGGACGGAGTTCCGGGCTGTGGGAAAACCAAAGAAATT 2597

Qy        2594 TTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTTCCTGGAAAACAAGCTGCTGCT 2653

Db        2598 CTTTCCAGGGTTAATTTTGATGAAGATCTAATTTTAGTACCTGGGAAGCAAGCCGCGGAA 2657

Qy        2654 ATGATCAGAAGAAGGGCTAATTCATCTGGACTGATAAGAGCCACAATGGACAATGTGAGA 2713

Db        2658 ATGATCAGAAGACGTGCGAATTCCTCAGGGATTATTGTGGCCACGAAGGACAACGTTAAA 2717

Qy        2714 ACGGTAGATTCACTTCTAATGCAT---------CCAAAACCGCGATCACACAAGAGGCTT 2764

Db        2718 ACCGTTGATTCTTTCATGATGAATTTTGGGAAAAGCACACGCTGTCAGTTCAAGAGGTTA 2777

Qy        2765 TTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTTAACTTCCTGGTGCTTATCTCT 2824

Db        2778 TTCATTGATGAAGGGTTGATGTTGCATACTGGTTGTGTTAATTTTCTTGTGGCGATGTCA 2837

Qy        2825 GGTTGCGACATCGCATACATTTACGGAGATACACAGCAGATTCCTTTCATTAACAGAGTT 2884

Db        2838 TTGTGCGAAATTGCATATGTTTACGGAGACACACAGCAGATTCCATACATCAATAGAGTT 2897

Qy        2885 CAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAAGTGGATGAAGTTGAGATGAGG 2944

Db        2898 TCAGGATTCCCGTACCCCGCCCATTTTGCCAAATTGGAAGTTGACGAGGTGGAGACACGC 2957

Qy        2945 AGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTCCTACAATCGAAGTACGAAGGA 3004

Db        2958 AGAACTACTCTCCGTTGTCCAGCCGATGTCACACATTATCTGAACAGGAGATATGAGGGC 3017

Qy        3005 GCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCATCTGAGATGATAGGCGGTAAG 3064

Db        3018 TTTGTCATGAGCACTTCTTCGGTTAAAAAGTCTGTTTCGCAGGAGATGGTCGGCGGAGCC 3077

Qy        3065 GGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGGAAAATTGTAACTTTCACTCAGGCT 3124

Db        3078 GCCGTGATCAATCCGATCTCAAAACCCTTGCATGGCAAGATCCTGACTTTTACCCAATCG 3137

Qy        3125 GATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTGAACACCGTTCATGAGATCCAA 3184

Db        3138 GATAAAGAAGCTCTGCTTTCAAGAGGGTATTCAGATGTTCACACTGTGCATGAAGTGCAA 3197

Qy        3185 GGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACGGCAACTCCACTGACTCTGATT 3244

Db        3198 GGCGAGACATACTCTGATGTTTCACTAGTTAGGTTAACCCCTACACCAGTCTCCATCATT 3257

Qy        3245 TCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGACACACAAAGAGCTTCAAATAT 3304

Db        3258 GCAGGAGACAGCCCACATGTTTTGGTCGCATTGTCAAGGCACACCTGTTCGCTCAAGTAC 3317

Qy        3305 TACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGTGATTTGTCTTCTTTAAGCTCC 3364

Db        3318 TACACTGTTGTTATGGATCCTTTAGTTAGTATCATTAGAGATCTAGAGAAACTTAGCTCG 3377

Qy        3365 TTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGATAGCAATTACAGATGGATGCA 3424

Db        3378 TACTTGTTAGATATGTATAAGGTCGATGCAGGAACACAATAGCAATTACAGATTGACTCG 3437

Qy        3425 GTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAATCAGGAGACTTTCCAGATCTA 3484

Db        3438 GTGTTCAAAGGTTCCAATCTTTTTGTTGCAGCGCCAAAGACTGGTGATATTTCTGATATG 3497

Qy        3485 CAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACTATACTTAACAAGTATGATGCT 3544
```

```
Db        3498 CAGTTTTACTATGATAAGTGTCTCCCAGGCAACAGCACCATGATGAATAATTTTGATGCT 3557

Qy        3545 GTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAGGATTGTGTTCTTGATTTTTCC 3604

Db        3558 GTTACCATGAGGTTGACTGACATTTCATTGAATGTCAAAGATTGCATATTGGATATGTCT 3617

Qy        3605 AAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTAGAGCCAGTTTTGCGTACCGCG 3664

Db        3618 AAGTCTGTTGCTGCGCCTAAGGATCAAATCAAACCACTAATACCTATGGTACGAACGGCG 3677

Qy        3665 GCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTGGTTGCAATGATTAAAAGAAAT 3724

Db        3678 GCAGAAATGCCACGCCAGACTGGACTATTGGAAAATTTAGTGGCGATGATTAAAAGGAAC 3737

Qy        3725 TTCAACGCACCAGACCTGACGGGGACGATTGACATTGAGAGCACCGCATCTGTTGTAGTA 3784

Db        3738 TTTAACGCACCCGAGTTGTCTGGCATCATTGATATTGAAAATACTGCATCTTTAGTTGTA 3797

Qy        3785 GATAAGTTTTTTGATAGCTATTTTATTAAAAAAGAAAAATACACAAAAAATATTGCTGGA 3844

Db        3798 GATAAGTTTTTTGATAGTTATTTGCTTAAAGAAAAAAGAAAACCAAATAAAAATGTTTCT 3857

Qy        3845 GTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAACAGGAAAGAAGTACTATTGGAC 3904

Db        3858 TTGTTCAGTAGAGAGTCTCTCAATAGATGGTTAGAAAAGCAGGAACAGGTAACAATAGGC 3917

Qy        3905 GACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATCGATCAGTACAAGCACATGATC 3964

Db        3918 CAGCTCGCAGATTTTGATTTTGTAGATTTGCCAGCAGTTGATCAGTACAGACACATGATT 3977

Qy        3965 AAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAGAATGAATACCCTGCTCTGCAA 4024

Db        3978 AAAGCACAACCCAAGCAAAAATTGGACACTTCAATCCAAACGGAGTACCCGGCTTTGCAG 4037

Qy        4025 ACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTGGCCGGTTTCT---CAGAGCTT 4081

Db        4038 ACGATTGTGTACCATTCAAAAAAGATCAATGCAATATTTGGCCCGTTGTTTAGTGAGCTT 4097

Qy        4082 ACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTTCTTTTCTTTACTAGGAAAACT 4141

Db        4098 ACTAGGCAATTACTGGACAGTGTTGATTCGAGCAGATTTTTGTTTTTCACAAGAAAGACA 4157

Qy        4142 CCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCGCACGTTCCTATGGATGTGTTA 4201

Db        4158 CCAGCGCAGATTGAGGATTTCTTCGGAGATCTCGACAGTCATGTGCCGATGGATGTCTTG 4217

Qy        4202 GAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAGTTTCATTGTGCTGTAGAGTAT 4261

Db        4218 GAGCTGGATATATCAAAATACGACAAATCTCAGAATGAATTCCACTGTGCAGTAGAATAC 4277

Qy        4262 GAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCCGAAGTGTGGAAACAAGGGCAC 4321

Db        4278 GAGATCTGGCGAAGATTGGGTTTTGAAGACTTCTTGGGAGAAGTTTGGAAACAAGGGCAT 4337

Qy        4322 AGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAGACATGTCTGTGGTATCAAAGG 4381

Db        4338 AGAAAGACCACCCTCAAGGATTATACCGCAGGTATAAAAACTTGCATCTGGTATCAAAGA 4397

Qy        4382 AAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTTATAATAGCAGCTTGCTTGGGT 4441

Db        4398 AAGAGCGGGGACGTCACGACGTTCATTGGAAACACTGTGATCATTGCTGCATGTTTGGCC 4457

Qy        4442 TCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTTTGTGGAGACGATTCCGTTTTG 4501

Db        4458 TCGATGCTTCCGATGGAGAAAATAATCAAAGGAGCCTTTTGCGGTGACGATAGTCTGCTG 4517

Qy        4502 TATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCATGTGCTAATCTCATGTGGAAT 4561

Db        4518 TACTTTCCAAAGGGTTGTGAGTTTCCGGATGTGCAACACTCCGCGAATCTTATGTGGAAT 4577

Qy        4562 TTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTTTGTGGTAGATACATCATACAC 4621
```

```
Db       4578 TTTGAAGCAAAACTGTTTAAAAAACAGTATGGATACTTTTGCGGAAGATATGTAATACAT 4637

Qy       4622 CATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAGTTGATCTCCAAACTTGGGGCA 4681
              || || |  |||   || |||||||| |||||  | ||||||||||| |||||||| ||
Db       4638 CACGACAGAGGATGCATTGTGTATTACGATCCCCTAAAGTTGATCTCGAAACTTGGTGCT 4697

Qy       4682 AAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGGGTGTCTTTGTGCGATGTTGCT 4741
              ||||| ||||||||||  || ||||| || ||||| ||   |||| | || |||||||||
Db       4698 AAACACATCAAGGATTGGGAACACTTGGAGGAGTTCAGAAGGTCTCTTTGTGATGTTGCT 4757

Qy       4742 TGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTGAACGCAGCTATCAAGGAGGTT 4801
                |||| |    |||   ||       |   | ||| || |||  ||| |   |||||||
Db       4758 GTTTCGTT---GAACAATTGTGCGTATTACACACAGTTGGACGACGCTGTATGGGAGGTT 4814

Qy       4802 CATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGTGTTAACAAATTTTTGTGTGAT 4861
              ||||| |||||   |   |||||||||| || |||  || |    || | ||||| ||||
Db       4815 CATAAGACCGCCCCTCCAGGTTCGTTTGTTTATAAAAGTCTGGTGAAGTATTTGTCTGAT 4874

Qy       4862 AAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAGTCTCAGAGATACTGTCAAAAT 4921
              ||| || | ||||||| ||||||| || |||||| |   | | | ||  |  || || ||
Db       4875 AAAGTTCTTTTTAGAAGTTTGTTTATAGATGGCTCTAGTTGTTAAAGGAAAAGTGAATAT 4934

Qy       4922 TAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACTTCCGGCATTCATGACTAAGGT 4981
               |  ||||| || || ||  | |||  |||  ||||  | ||| |  |  | ||    ||
Db       4935 CAATGAGTTTATCGACCTGACAAAAATGGAGAAGATCTTACCGTCGATGTTTACCCCTGT 4994

Qy       4982 CAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGCTGTTAAGAATGATAGTCTTTC 5041
               ||||||||||     || |  || || || || |||| |  | |||||||     | ||
Db       4995 AAAGAGTGTTATGTGTTCCAAAGTTGATAAAATAATGGTTCATGAGAATGAGTCATTGTC 5054

Qy       5042 TGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAAAGGGTATGTGTGCTTAGCTGA 5101
               || ||  |  | |||||||| |||||| |  || | |  || || || || ||||| |
Db       5055 AGAGGTGAACCTTCTTAAAGGAGTTAAGCTTATTGATAGTGGATACGTCTGTTTAGCCGG 5114

Qy       5102 TTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTGCCGTGGTGGTGTCAGTGTTTG 5161
              |||||| ||  | || ||||||||  | || || || ||| | || ||||| || || ||
Db       5115 TTTGGTCGTCACGGGCGAGTGGAACTTGCCTGACAATTGCAGAGGAGGTGTGAGCGTGTG 5174

Qy       5162 TATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAACGCTGGGTGCGTATCACGCCCC 5221
              | | || || || || ||| ||||     | || || || || ||  | ||  || |  |
Db       5175 TCTGGTGGACAAAAGGATGGAAAGAGCCGACGAGGCCACTCTCGGATCTTACTACACAGC 5234

Qy       5222 TGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAATTATTCAATAACATCCGAGGA 5281
               |||   || || |  |||   || ||| |  | || |||||| | |||||  || ||||
Db       5235 AGCTGCAAAGAAAAGATTTCAGTTCAAGGTCGTTCCCAATTATGCTATAACCACCCAGGA 5294

Qy       5282 TGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAAAGGAGTGGCTATGGAAGAAGG 5341
               ||   |||  ||   |||||||| ||||| ||||| | |   |||   |||  ||  ||
Db       5295 CGCGATGAAAAACGTCTGGCAAGTTTTAGTTAATATTAGAAATGTGAAGATGTCAGCGGG 5354

Qy       5342 ATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGTAGTACATAAAAATAATGTAAG 5401
               | ||||||  | ||| ||||||| || ||  | ||| | ||  ||| ||||||| |||
Db       5355 TTTCTGTCCGCTTTCTCTGGAGTTTGTGTCGGTGTGTATTGTTTATAGAAATAATATAAA 5414

Qy       5402 AAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGGCTCGCCAATTGAACTCACTGA 5461
              |  ||||||||| ||    |||   |  |||| ||||||   ||| || ||||| || ||
Db       5415 ATTAGGTTTGAGAGAGAAGATTACAAACGTGAGAGACGGAGGGCCCATGGAACTTACAGA 5474

Qy       5462 AAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGCTGTGAAACTCGAAAAGGTTC 5520
              | | || ||||| |||||| |||| || || || ||| |  | |  || | |||| |||
Db       5475 AGAAGTCGTTGATGAGTTCATGGAAGATGTCCCTATGTCGATCAGGCTTGCAAAGTTTC 5533

RESULT 14
US-09-993-059-33
; Sequence 33, Application US/09993059
; Publication No. US20020088024A1
; GENERAL INFORMATION:
;  APPLICANT: GARGER, Stephen A.
;  APPLICANT:  TURPEN, Thomas H.
;  APPLICANT:  KUMAGAI, Monto H.
;  TITLE OF INVENTION: PRODUCTION OF LYSOSOMAL ENZYMES IN
;  TITLE OF INVENTION:  PLANTS BY TRANSIENT EXPRESSION
;  FILE REFERENCE: 008010087CPUS06
;  CURRENT APPLICATION NUMBER: US/09/993,059
;  CURRENT FILING DATE:  2001-11-13
;  NUMBER OF SEQ ID NOS: 37
;  SOFTWARE: FastSEQ for Windows Version 4.0
; SEQ ID NO 33
;   LENGTH: 11641
;   TYPE: DNA
;   ORGANISM: Tobacco mosaic virus
US-09-993-059-33

  Query Match             36.1%;  Score 2291.4;  DB 9;  Length 11641;
  Best Local Similarity   64.0%;  Pred. No. 0;
  Matches 3532;  Conservative    0;  Mismatches 1966;  Indels   21;  Gaps    4;

Qy         20 ACAACAACAATTAAAACAAAAACAACATATTACAAACAACAAACAACAACAATGGCACAC 79
              || |  |  |  |||  | |||||||||   |   || |   ||||  ||||||||| ||
Db         18 ACCAACAACAACAAACAACAAACAACATTACAATTACTATTTACAATTACAATGGCATAC 77

Qy         80 ATACAATCTATAATTAGCAACGCCCTTCTTGAAAGCGTGAGTGGTAAAAACACTCTCGTT 139
              | |||  |    |  |     ||  | || || |  ||  | || || ||| |  | ||
Db         78 ACACAGACAGCTACCACATCAGCTTTGCTGGACACTGTCCGAGGAAACAACTCCTTGGTC 137

Qy        140 AATGACCTTGCAAGAAGGCGCATGTACGATACGGCCGTGGAAGAATTTAACGCCCGCGAC 199
              ||||| || ||||   | ||  | ||||| || || || ||||| |||||||| || |||
Db        138 AATGATCTAGCAAAGCGTCGTCTTTACGACACAGCGGTTGAAGAGTTTAACGCTCGTGAC 197

Qy        200 CGTAGACCAAAGGTCAACTTTTCCAAAACTATTAGCGAAGAGCAAACGCTTCTAGTCTCC 259
              || || || ||||| |||||||| |||   || ||||| ||||| |||||| | |   ||
Db        198 CGCAGGCCCAAGGTGAACTTTTCAAAAGTAATAAGCGAGGAGCAGACGCTTATTGCTACC 257

Qy        260 AACGCGTACCCGGAGTTCCAGATTACCTTTTATAATACTCAAAATGCCGTACACAGTTTG 319
                 ||||| || || ||||| ||||| |||||||| || ||||||||||| ||     |
Db        258 CGGGCGTATCCAGAATTCCAAATTACATTTTATAACACGCAAAATGCCGTGCATTCGCTT 317

Qy        320 GCTGGAGGTTTGAGAGCATTAGAATTGGAATATCTGATGCTACAAGTTCCCTATGGATCG 379
              || || || ||| || | |||||| |||||||||||||| | ||| ||||||| |||||
Db        318 GCAGGTGGATTGCGATCTTTAGAACTGGAATATCTGATGATGCAAATTCCCTACGGATCA 377

Qy        380 CCGACATATGATATAGGTGGGAACTTTGCAGCACATTTGTTCAAAGGCAGGGATTACGTG 439
                ||| ||||| ||||| ||||| |||||| | ||| ||||||| ||  | |  || ||
Db        378 TTGACTTATGACATAGGCGGGAATTTTGCATCGCATCTGTTCAAGGGACGAGCATATGTA 437

Qy        440 CATTGCTGTATGCCCAATCTGGACATACGAGATATAATGAGGCACGAAGGACAAAAGGAC 499
              || |||||||||||||| |||||| | ||||| || ||| |||||||||| || || |||
Db        438 CACTGCTGTATGCCCAACCTGGACGTTCGAGACATCATGCGGCACGAAGGCCAGAAAGAC 497

Qy        500 TCAATTGAGATGTATTTGTCCAGATTGTCTCGTTCTAACAAGGTAATTCCTGAGTTTCAA 559
                 |||||  | ||  | || ||  |     |       ||   | | ||  | || |||
Db        498 AGTATTGAACTATACCTTTCTAGGCTAGAGAGAGGGGGGAAAACAGTCCCCAACTTCCAA 557

Qy        560 AGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAAGTCTGCTGCTCTAAAACTTTT 619
              | ||| ||| |||| || ||||||  |||  | || |    |||    || |||||
Db        558 AAGGAAGCATTTGACAGATACGCAGAAATTCCTGAAGACGCTGTCTGTCACAATACTTTC 617

Qy        620 CAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGAAGATACGCTGTTGCTCTGCAC 679
              |||      |||   || |||    || |    || |||   || ||  |||| || |||
Db        618 CAGACAATGCGACATCAGCCGATGCAGCAATCAGGCAGAGTGTATGCCATTGCGCTACAC 677

Qy        680 AGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCGTTAATATCTAAGAATATACAT 739
              ||  | ||||| || || |   ||||||| || || ||  |  |    || ||| | |||
Db        678 AGCATATATGACATACCAGCCGATGAGTTCGGGGCGGCACTCTTGAGGAAAAATGTCCAT 737

Qy        740 GTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTACTAGACCAGACGGAGGTTACG 799
                 || ||||| |||| |   ||  | ||     |  | || ||  |  |  | || |
Db        738 ACGTGCTATGCCGCTTTCCACTTCTCTGAGAACCTGCTTCTTGAAGATTCATACGTCAAT 797

Qy        800 CTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGATGATGTTTCTTTTTTCTTTGCT 859
               |  | |||||   |||   |||     | || || ||  |  |  | ||||  |||||
Db        798 TTGGACGAAATCAACGCGTGTTTTTCGCGCGATGGAGACAAGTTGACCTTTTCTTTTGCA 857

Qy        860 GATGAAAGTACTTTAAATTATAGTCATAAATACAAAAATATCTTGCATTATGTAGTTAAA 919
                 || |||||| | |||||| ||||||  ||    |||||  |  | |||||    |||
```

```
Db        858 TCAGAGAGTACTCTTAATTATTGTCATAGTTATTCTAATATTCTTAAGTATGTGTGCAAA 917

Qy        920 TCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAGGAATTTTTAGTCACTAGGGTT 979
               ||||||| || || |||| ||||   |||||| | ||||| ||||||||||| || |||
Db        918 ACTTACTTCCCGGCCTCTAATAGAGAGGTTTACATGAAGGAGTTTTTAGTCACCAGAGTT 977

Qy        980 AATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTATATTCTGTACAAGAGTGTTAGA 1039
              ||||| ||||||||||| ||| | | | ||||||| | | || |||||||  ||||
Db        978 AATACCTGGTTTTGTAAGTTTTCTAGAATAGATACTTTTCTTTTGTACAAAGGTGTGGCC 1037

Qy       1040 CAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATGGAAGACGCCTTTGCTTACAAG 1099
              ||   | |    |||||||| ||||| |||   || ||||||||||| |    ||||||
Db       1038 CATAAAAGTGTAGATAGTGAGCAGTTTTATACTGCAATGGAAGACGCATGGCATTACAAA 1097

Qy       1100 AAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTTAGAGACACGGCTTCGGTTAAC 1159
              || ||  | || |||| |||||  || |||    || ||   ||  |  | || || ||
Db       1098 AAGACTCTTGCAATGTGCAACAGCGAGAGAATCCTCCTTGAGGATTCATCATCAGTCAAT 1157

Qy       1160 TTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCGCTGTTTGAGGGTTCTATTACC 1219
              |  ||||| || || |||| ||| ||||| || |||||  | || ||   |||| |
Db       1158 TACTGGTTTCCCAAAATGAGGGATATGGTCATCGTACCATTATTCGACATTTCTTTGGAG 1217

Qy       1220 AGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGTGACTTCGTTTACACAGTGCTT 1279
              |  |  |||| |||  | |  || ||| | ||       || ||||| |  |||||||||
Db       1218 ACTAGTAAGAGGACGCGCAAGGAAGTCTTAGTGTCCAAGGATTTCGTGTTTACAGTGCTT 1277

Qy       1280 AATCATATCAGAACATATCAAGCCAAAGCGTTAACTTACCAGAACGTATTATCTTTCGTG 1339
              || || ||  ||||||| || || |||||  | || |||   || || || || || ||
Db       1278 AACCACATTCGAACATACCAGGCGAAAGCTCTTACATACGCAAATGTTTTGTCCTTTGTC 1337

Qy       1340 GAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACTGCTAGGTCTGAATGGGATGTA 1399
              || || ||  ||||  | || || || || ||||| || || ||||| |||||||||||
Db       1338 GAATCGATTCGATCGAGGGTAATCATTAACGGTGTGACAGCGAGGTCCGAATGGGATGTG 1397

Qy       1400 GATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTCTTGCAGACTAAGCTGGCTGCG 1459
              || ||| |  |  | ||| ||||||| ||||| || | | |||| |||||||| || |
Db       1398 GACAAATCTTTGTTACAATCCTTGTCCATGACGTTTTACCTGCATACTAAGCTTGCCGTT 1457

Qy       1460 CTTCAAGACGATATAGTAATGGGAAAGTTTCGGTGCTTGGATAAGACCACTTCTGAACTT 1519
              ||  | || ||  || | ||  | |||||| |   |      || ||    |   | | |
Db       1458 CTAAAGGATGACTTACTGATTAGCAAGTTTAGTCTCGGTTCGAAAACGGTGTGCCAGCAT 1517

Qy       1520 ATTTGGGATGAGGTGGGCAAATTTTTTGGAAACGTTTTCCCCACTATCAAAGAGAGATTG 1579
               | ||||||||| |          ||||| ||||  || ||| |  | ||||||||  |
Db       1518 GTGTGGGATGAGATTTCGCTGGCGTTTGGGAACGCATTTCCCTCCGTGAAAGAGAGGCTC 1577

Qy       1580 GTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTGAAGATCAAGATCCCAGATCTG 1639
               ||| ||||||| || |    ||   |    | ||  |  |||||| | | || |||||
Db       1578 TTGAACAGGAAACTTATCAGAGTGGCAGGCGACGCATTAGAGATCAGGGTGCCTGATCTA 1637

Qy       1640 TATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACCAAGTCTGAGGAGTTACCGCAT 1699
              ||||| || |   | ||||| || ||  |||| ||||     |||| |||  | ||
Db       1638 TATGTGACCTTCCACGACAGATTAGTGACTGAGTACAAGGCCTCTGTGGACATGCCTGCG 1697

Qy       1700 CTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATGTACGACGCGTTATCAGAATTA 1759
              || || || | |||| |  | |||||| | ||    |||||| | ||  | ||||| |||
Db       1698 CTTGACATTAGGAAGAAGATGGAAGAAACGGAAGTGATGTACAATGCACTTTCAGAGTTA 1757

Qy       1760 TCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAGTTCAAAGACATGTGCAAGGCT 1819
              ||  |  | | ||   |||| || |||||| | |     ||     | |||||| |  ||
Db       1758 TCGGTGTTAAGGGAGTCTGACAAATTCGATGTTGATGTTTTTTCCCAGATGTGCCAATCT 1817

Qy       1820 TTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTTGCAGTGGCCGAGAATAGAAGC 1879
              || || |||   ||      ||||||    || || || || ||       |||   |||
Db       1818 TTGGAAGTTGACCCAATGACGGCAGCGAAGGTTATAGTCGCGGTCATGAGCAATGAGAGC 1877

Qy       1880 GGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAATGTGGCTAAGGCTCT------T 1933
              ||| | ||||| || |||||    || || |||| |||||| ||    ||| |      |
Db       1878 GGTCTGACTCTCACATTTGAACGACCTACTGAGGCGAATGTTGCGCTAGCTTTACAGGAT 1937

Qy       1934 AAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCGACATCCGAAGAGGTGAACGTA 1993
               ||   | ||| || || |  |   |     ||    | | |   |  || |
Db       1938 CAAGAGAAGGCTTCAGAAGGTGCTTTGGTAGTTACCTCAAGAGAAGTTGAAGAACCGTCC 1997

Qy       1994 AATAAATTTTCTATTGCTGAGAAAGGGAGATTGCCTGTGTGTGCAGAAAGTCATGGTTTG 2053
              |  ||   ||| || ||      || |  |      |   ||   |   |  ||  |  |
Db       1998 ATGAAGGGTTCGATGGCCAGAGGAGAGTTACAATTAGCTGGTCTTGCTGGAGATCATCCG 2057

Qy       2054 ACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTCAACGATTTCCATAAGGCTTGC 2113
                |    |  | |   || || ||||| | |||||  |  |  | || |||| |||
Db       2058 GAGTCGTCCTATTCTAAGAACGAGGAGATAGAGTCTTTAGAGCAGTTTCATATGGCAACG 2117

Qy       2114 GTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTCTACACTGGCTCACTCAAAGTT 2173
              |  |||    | |||   ||||| |||   ||| |||| ||||| ||  |  | ||||||
Db       2118 GCAGATTCGTTAATTCGTAAGCAGATGAGCTCGATTGTGTACACGGGTCCGATTAAAGTT 2177

Qy       2174 CAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCGTTGTCCGCCACTGTATCAAAT 2233
              || |||||||| |||| | | || ||  ||| ||| ||  | || ||  | || || |||
Db       2178 CAGCAAATGAAAAACTTTATCGATAGCCTGGTAGCATCACTATCTGCTGCGGTGTCGAAT 2237

Qy       2234 CTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCTGATTCCAGGGAGAAAGTTGGT 2293
              ||   ||||   || || |||  ||  |    |||   |||  || |  | ||  ||||
Db       2238 CTCGTCAAGATCCTCAAAGATACAGCTGCTATTGACCTTGAAACCCGTCAAAAGTTTGGA 2297

Qy       2294 GTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCTGCGGCCAAAGGTCATTCATGG 2353
              || | ||||||  | |  |  |||||| |  |||||||  |||||||  ||||| |||||
Db       2298 GTCTTGGATGTTGCATCTAGGAAGTGGTTAATCAAACCAACGGCCAAGAGTCATGCATGG 2357

Qy       2354 GGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCACTTCTATCTTATGAAGGAGAT 2413
              || |||||        ||  | ||||      |   || ||| |    ||||| |   |
Db       2358 GGTGTTGTTGAAACCCACGCGAGGAAGTATCATGTGGCGCTTTTGGAATATGATGAGCAG 2417

Qy       2414 AGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTATCATCTGATACAATGGTATAT 2473
               |  |||||||       || ||||| || || |||||    |||||  |  | || |||
Db       2418 GGTGTGGTGACATGCGATGATTGGAGAAGAGTAGCTGTCAGCTCTGAGTCTGTTGTTTAT 2477

Qy       2474 TCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATGAGAGACGGTGAACCCCACGAA 2533
              || || || || || |||  || |||| | | |    |  || |||| ||||| || |
Db       2478 TCCGACATGGCGAAACTCAGAACTCTGCGCAGACTGCTTCGAAACGGAGAACCGCATGTC 2537

Qy       2534 CCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGTTGTGGAAAGTACAAAGGAGAT 2593
                ||  |||||| | || |||||||| || || || || ||||| ||   ||||| |  |
Db       2538 AGTAGCGCAAAGGTTGTTCTTGTGGACGGAGTTCCGGGCTGTGGGAAAACCAAAGAAATT 2597

Qy       2594 TTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTTCCTGGAAAACAAGCTGCTGCT 2653
               ||   ||  || || ||||||| ||| | || || || ||||| || ||||| || |
Db       2598 CTTTCCAGGGTTAATTTTGATGAAGATCTAATTTTAGTACCTGGGAAGCAAGCCGCGGAA 2657

Qy       2654 ATGATCAGAAGAAGGGCTAATTCATCTGGACTGATAAGAGCCACAATGGACAATGTGAGA 2713
              |||||||||||| | || ||||| || ||  | ||    ||||| | |||||| || | |
Db       2658 ATGATCAGAAGACGTGCGAATTCCTCAGGGATTATTGTGGCCACGAAGGACAACGTTAAA 2717

Qy       2714 ACGGTAGATTCACTTCTAATGCAT---------CCAAAACCGCGATCACACAAGAGGCTT 2764
              || || |||||  |  | ||| ||            | ||   |      ||||||| |
Db       2718 ACCGTTGATTCTTTCATGATGAATTTTGGGAAAAGCACACGCTGTCAGTTCAAGAGGTTA 2777

Qy       2765 TTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTTAACTTCCTGGTGCTTATCTCT 2824
              || |||||||||||||||||| |||| || ||||||||||| || || |||   || ||
Db       2778 TTCATTGATGAAGGGTTGATGTTGCATACTGGTTGTGTTAATTTTCTTGTGGCGATGTCA 2837

Qy       2825 GGTTGCGACATCGCATACATTTACGGAGATACACAGCAGATTCCTTTCATTAACAGAGTT 2884
                 ||||| || |||||  |||||||||| |||||||||||||| | ||| || ||||||
Db       2838 TTGTGCGAAATTGCATATGTTTACGGAGACACACAGCAGATTCCATACATCAATAGAGTT 2897

Qy       2885 CAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAAGTGGATGAAGTTGAGATGAGG 2944
                    |||||||| |||   |||||||  ||  || |||| || || || ||||   |
Db       2898 TCAGGATTCCCGTACCCCGCCCATTTTGCCAAATTGGAAGTTGACGAGGTGGAGACACGC 2957

Qy       2945 AGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTCCTACAATCGAAGTACGAAGGA 3004
              || || || ||  | || ||||  ||||| |    ||  ||  |   ||  || || ||
Db       2958 AGAACTACTCTCCGTTGTCCAGCCGATGTCACACATTATCTGAACAGGAGATATGAGGGC 3017

Qy       3005 GCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCATCTGAGATGATAGGCGGTAAG 3064
                 || |  | ||||||  | ||  ||   || || ||    |||||| | |||||
Db       3018 TTTGTCATGAGCACTTCTTCGGTTAAAAAGTCTGTTTCGCAGGAGATGGTCGGCGGAGCC 3077
```

```
Qy     3065 GGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGGAAAATTGTAACTTTCACTCAGGCT 3124
            |  ||  | ||     | || |||||  |  | || || ||  | |||||| || ||  | 
Db     3078 GCCGTGATCAATCCGATCTCAAAACCCTTGCATGGCAAGATCCTGACTTTTACCCAATCG 3137

Qy     3125 GATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTGAACACCGTTCATGAGATCCAA 3184
            ||||||   |   |       |  || |||    ||||  |||| || ||||||  | |||
Db     3138 GATAAAGAAGCTCTGCTTTCAAGAGGGTATTCAGATGTTCACACTGTGCATGAAGTGCAA 3197

Qy     3185 GGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACGGCAACTCCACTGACTCTGATT 3244
            || || || |     ||||| || || || || || ||  | || ||| |  |  | |||
Db     3198 GGCGAGACATACTCTGATGTTTCACTAGTTAGGTTAACCCCTACACCAGTCTCCATCATT 3257

Qy     3245 TCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGACACACAAAGAGCTTCAAATAT 3304
             |         ||| ||||||| | |||||  || | || |||||        |||| || 
Db     3258 GCAGGAGACAGCCCACATGTTTTGGTCGCATTGTCAAGGCACACCTGTTCGCTCAAGTAC 3317

Qy     3305 TACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGTGATTTGTCTTCTTTAAGCTCC 3364
            ||||| || ||  | |||||||||||    || ||||| ||| |        | ||||| 
Db     3318 TACACTGTTGTTATGGATCCTTTAGTTAGTATCATTAGAGATCTAGAGAAACTTAGCTCG 3377

Qy     3365 TTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGATAGCAATTACAGATGGATGCA 3424
            | | | ||||| ||||||| ||| || ||||| |    ||||||||||||||| ||  | 
Db     3378 TACTTGTTAGATATGTATAAGGTCGATGCAGGAACACAATAGCAATTACAGATTGACTCG 3437

Qy     3425 GTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAATCAGGAGACTTTCCAGATCTA 3484
            ||||||||||||   ||||| ||||| ||| | || ||  | || ||  || | ||| | 
Db     3438 GTGTTCAAAGGTTCCAATCTTTTTGTTGCAGCGCCAAAGACTGGTGATATTTCTGATATG 3497

Qy     3485 CAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACTATACTTAACAAGTATGATGCT 3544
            |||||   ||| |||   || ||||| || || || || ||  | || || | |||||||
Db     3498 CAGTTTTACTATGATAAGTGTCTCCCAGGCAACAGCACCATGATGAATAATTTTGATGCT 3557

Qy     3545 GTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAGGATTGTGTTCTTGATTTTTCC 3604
            ||||||||||||||   ||| | |    | ||||| || |||||  |  | ||| | || 
Db     3558 GTTACCATGAGGTTGACTGACATTTCATTGAATGTCAAAGATTGCATATTGGATATGTCT 3617

Qy     3605 AAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTAGAGCCAGTTTTGCGTACCGCG 3664
            ||   | || |   ||| |||||    |    |   |||   ||  |  | || || |||
Db     3618 AAGTCTGTTGCTGCGCCTAAGGATCAAATCAAACCACTAATACCTATGGTACGAACGGCG 3677

Qy     3665 GCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTGGTTGCAATGATTAAAAGAAAT 3724
            || |||  |||| |     | |||||| | |||||| | || || |||||||||||| || 
Db     3678 GCAGAAATGCCACGCCAGACTGGACTATTGGAAAATTTAGTGGCGATGATTAAAAGGAAC 3737

Qy     3725 TTCAACGCACCAGACCTGACGGGGACGATTGACATTGAGAGCACCGCATCTGTTGTAGTA 3784
            || ||||||||| ||  || || || |  |||||| ||||| |  || ||||||| | || |||
Db     3738 TTTAACGCACCCGAGTTGTCTGGCATCATTGATATTGAAAATACTGCATCTTTAGTTGTA 3797

Qy     3785 GATAAGTTTTTTGATAGCTATTTTATTAAAAAAGAAAAATACACAAAAAATATTGCTGGA 3844
            ||||||||||||||||| ||||  ||||| || ||| | |  |||| || | || |   
Db     3798 GATAAGTTTTTTGATAGTTATTTGCTTAAAGAAAAAAGAAAACCAAATAAAAATGTTTCT 3857

Qy     3845 GTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAACAGGAAAGAAGTACTATTGGAC 3904
             || | |  |  || ||  | |  |||||||| |||||   | || | ||  | | | |
Db     3858 TTGTTCAGTAGAGAGTCTCTCAATAGATGGTTAGAAAAGCAGGAACAGGTAACAATAGGC 3917

Qy     3905 GACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATCGATCAGTACAAGCACATGATC 3964
             |  | ||  | |   |||||  |||| ||| ||  | ||||||||||  |||||||| 
Db     3918 CAGCTCGCAGATTTTGATTTTGTAGATTTGCCAGCAGTTGATCAGTACAGACACATGATT 3977

Qy     3965 AAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAGAATGAATACCCTGCTCTGCAA 4024
            || || ||||| || || ||||||||  |||||| || |  || ||||| ||| |||| 
Db     3978 AAAGCACAACCCAAGCAAAAATTGGACACTTCAATCCAAACGGAGTACCCGGCTTTGCAG 4037

Qy     4025 ACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTGGCCGGTTTCT---CAGAGCTT 4081
            || ||||| |||||||| ||  ||||||| |  | ||| | |    |  |     ||||||
Db     4038 ACGATTGTGTACCATTCAAAAAAGATCAATGCAATATTTGGCCCGTTGTTTAGTGAGCTT 4097

Qy     4082 ACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTTCTTTTCTTTACTAGGAAAACT 4141
            || |||    | || ||     |||||||| |  |  ||| | || || || || || |  
Db     4098 ACTAGGCAATTACTGGACAGTGTTGATTCGAGCAGATTTTTGTTTTTCACAAGAAAGACA 4157

Qy     4142 CCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCGCACGTTCCTATGGATGTGTTA 4201
            ||||  |||||| | || || |||   |||||||||   || || || |||||||| || 
Db     4158 CCAGCGCAGATTGAGGATTTCTTCGGAGATCTCGACAGTCATGTGCCGATGGATGTCTTG 4217

Qy     4202 GAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAGTTTCATTGTGCTGTAGAGTAT 4261
            || |||||||| || || || || || || ||||| || || |||||| ||||| || 
Db     4218 GAGCTGGATATATCAAAATACGACAAATCTCAGAATGAATTCCACTGTGCAGTAGAATAC 4277

Qy     4262 GAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCCGAAGTGTGGAAACAAGGGCAC 4321
            || || |||  ||||||||||| |  | || || ||||  |||| ||||||||||||||| 
Db     4278 GAGATCTGGCGAAGATTGGGTTTTGAAGACTTCTTGGGAGAAGTTTGGAAACAAGGGCAT 4337

Qy     4322 AGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAGACATGTCTGTGGTATCAAAGG 4381
            || || || ||  | |||||||| |  || || || || || ||  | ||||||||||| 
Db     4338 AGAAAGACCACCCTCAAGGATTATACCGCAGGTATAAAAACTTGCATCTGGTATCAAAGA 4397

Qy     4382 AAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTTATAATAGCAGCTTGCTTGGGT 4441
            || ||||| || || || || ||||| || || ||||| || || || || || ||||  
Db     4398 AAGAGCGGGGACGTCACGACGTTCATTGGAAACACTGTGATCATTGCTGCATGTTTGGCC 4457

Qy     4442 TCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTTTGTGGAGACGATTCCGTTTTG 4501
            || ||| | |||||||| ||  | || ||||| || |||| || |||||||    |  ||
Db     4458 TCGATGCTTCCGATGGAGAAAATAATCAAAGGAGCCTTTTGCGGTGACGATAGTCTGCTG 4517

Qy     4502 TATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCATGTGCTAATCTCATGTGGAAT 4561
            || |||||||||||||  || || || ||  | ||    |  || ||||| |||||||||
Db     4518 TACTTTCCAAAGGGTTGTGAGTTTCCGGATGTGCAACACTCCGCGAATCTTATGTGGAAT 4577

Qy     4562 TTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTTTGTGGTAGATACATCATACAC 4621
            ||||| || ||||||| || |||   ||| || |||||||| || |||||  | ||||| 
Db     4578 TTTGAAGCAAAACTGTTTAAAAAACAGTATGGATACTTTTGCGGAAGATATGTAATACAT 4637

Qy     4622 CATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAGTTGATCTCCAAACTTGGGGCA 4681
            || || |  |||   || ||||||| |||||  | ||||||||||| |||||||| || 
Db     4638 CACGACAGAGGATGCATTGTGTATTACGATCCCCTAAAGTTGATCTCGAAACTTGGTGCT 4697

Qy     4682 AAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGGGTGTCTTTGTGCGATGTTGCT 4741
            ||||| ||||||||||  || ||||| || ||||| ||   |||| | || |||||||||
Db     4698 AAACACATCAAGGATTGGGAACACTTGGAGGAGTTCAGAAGGTCTCTTTGTGATGTTGCT 4757

Qy     4742 TGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTGAACGCAGCTATCAAGGAGGTT 4801
              |||| |    |||   ||       |   | ||| || |||  ||| |   |||||||
Db     4758 GTTTCGTT---GAACAATTGTGCGTATTACACACAGTTGGACGACGCTGTATGGGAGGTT 4814

Qy     4802 CATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGTGTTAACAAATTTTTGTGTGAT 4861
            ||||| |||||   |   |||||||||| || |||  || |    || | ||||| ||||
Db     4815 CATAAGACCGCCCCTCCAGGTTCGTTTGTTTATAAAAGTCTGGTGAAGTATTTGTCTGAT 4874

Qy     4862 AAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAGTCTCAGAGATACTGTCAAAAT 4921
            ||| || | ||||||| ||||||| || |||||| |   | | | ||  |  || || ||
Db     4875 AAAGTTCTTTTTAGAAGTTTGTTTATAGATGGCTCTAGTTGTTAAAGGAAAAGTGAATAT 4934

Qy     4922 TAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACTTCCGGCATTCATGACTAAGGT 4981
             |  ||||| || || ||  | |||  |||  ||||  | ||| |  |  | ||    ||
Db     4935 CAATGAGTTTATCGACCTGACAAAAATGGAGAAGATCTTACCGTCGATGTTTACCCCTGT 4994

Qy     4982 CAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGCTGTTAAGAATGATAGTCTTTC 5041
             ||||||||||     || |  || || ||  || |||| |  | ||||||||     | ||
Db     4995 AAAGAGTGTTATGTGTTCCAAAGTTGATAAAATAATGGTTCATGAGAATGAGTCATTGTC 5054

Qy     5042 TGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAAAGGGTATGTGTGCTTAGCTGA 5101
             || ||  |  | |||||||| |||||| |  || | |  || || || || ||||| | 
Db     5055 AGAGGTGAACCTTCTTAAAGGAGTTAAGCTTATTGATAGTGGATACGTCTGTTTAGCCGG 5114

Qy     5102 TTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTGCCGTGGTGGTGTCAGTGTTTG 5161
            |||||| ||  | || ||||||||  | || || || ||| | || |||||| || || ||
Db     5115 TTTGGTCGTCACGGGCGAGTGGAACTTGCCTGACAATTGCAGAGGAGGTGTGAGCGTGTG 5174

Qy     5162 TATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAACGCTGGGTGCGTATCACGCCCC 5221
            | | || || || || ||| ||||     | || || || || ||  | ||  || |  |
Db     5175 TCTGGTGGACAAAAGGATGGAAAGAGCCGACGAGGCCACTCTCGGATCTTACTACACAGC 5234

Qy     5222 TGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAATTATTCAATAACATCCGAGGA 5281
             |||   || || |  |||   || ||| |  | || |||||| | |||||  || ||||
```

```
Db       5235 AGCTGCAAAGAAAAGATTTCAGTTCAAGGTCGTTCCCAATTATGCTATAACCACCCAGGA 5294

Qy       5282 TGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAAAGGAGTGGCTATGGAAGAAGG 5341
               ||   |||  ||   |||||||| ||||| ||||| | |   |||   |||  ||  ||
Db       5295 CGCGATGAAAAACGTCTGGCAAGTTTTAGTTAATATTAGAAATGTGAAGATGTCAGCGGG 5354

Qy       5342 ATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGTAGTACATAAAAATAATGTAAG 5401
               | ||||||  | ||| ||||||| || ||  | ||| | ||  ||| ||||||| |||
Db       5355 TTTCTGTCCGCTTTCTCTGGAGTTTGTGTCGGTGTGTATTGTTTATAGAAATAATATAAA 5414

Qy       5402 AAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGGCTCGCCAATTGAACTCACTGA 5461
              |  ||||||||| ||    |||   |  |||| ||||||   ||| || ||||| || ||
Db       5415 ATTAGGTTTGAGAGAGAAGATTACAAACGTGAGAGACGGAGGGCCCATGGAACTTACAGA 5474

Qy       5462 AAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGCTGTGAAACTCGAAAAGGTTC 5520
              | | || ||||| |||||| |||| || || || ||| |  | |  || | |||| |||
Db       5475 AGAAGTCGTTGATGAGTTCATGGAAGATGTCCCTATGTCGATCAGGCTTGCAAAGTTTC 5533


RESULT 15
US-10-103-327-33
; Sequence 33, Application US/10103327
; Publication No. US20030106095A1
; GENERAL INFORMATION:
;  APPLICANT: GARGER, Stephen A.
;  APPLICANT:  TURPEN, Thomas H.
;  APPLICANT:  KUMAGAI, Monto H.
;  TITLE OF INVENTION: PRODUCTION OF LYSOSOMAL ENZYMES IN
;  TITLE OF INVENTION:  PLANTS BY TRANSIENT EXPRESSION
;  FILE REFERENCE: 008010087CPUS06
;  CURRENT APPLICATION NUMBER: US/10/103,327
;  CURRENT FILING DATE:  2002-03-20
;  PRIOR APPLICATION NUMBER: US/09/993,059
;  PRIOR FILING DATE: 2001-11-13
;  NUMBER OF SEQ ID NOS: 37
;  SOFTWARE: FastSEQ for Windows Version 4.0
; SEQ ID NO 33
;   LENGTH: 11641
;   TYPE: DNA
;   ORGANISM: Tobacco mosaic virus
US-10-103-327-33

  Query Match             36.1%;  Score 2291.4;  DB 15;  Length 11641;
  Best Local Similarity   64.0%;  Pred. No. 0;
  Matches 3532;  Conservative    0;  Mismatches 1966;  Indels   21;  Gaps    4;

Qy         20 ACAACAACAATTAAAACAAAAACAACATATTACAAACAACAAACAACAACAATGGCACAC 79
              || |  |  |  |||  | |||||||||   |   || |   ||||  ||||||||| ||
Db         18 ACCAACAACAACAAACAACAAACAACATTACAATTACTATTTACAATTACAATGGCATAC 77

Qy         80 ATACAATCTATAATTAGCAACGCCCTTCTTGAAAGCGTGAGTGGTAAAAACACTCTCGTT 139
              | |||  |    |  |     ||  | || || |  ||  | || || ||| |  | ||
Db         78 ACACAGACAGCTACCACATCAGCTTTGCTGGACACTGTCCGAGGAAACAACTCCTTGGTC 137

Qy        140 AATGACCTTGCAAGAAGGCGCATGTACGATACGGCCGTGGAAGAATTTAACGCCCGCGAC 199
              ||||| || ||||   | ||  | ||||| || || || ||||| |||||||| || |||
Db        138 AATGATCTAGCAAAGCGTCGTCTTTACGACACAGCGGTTGAAGAGTTTAACGCTCGTGAC 197

Qy        200 CGTAGACCAAAGGTCAACTTTTCCAAAACTATTAGCGAAGAGCAAACGCTTCTAGTCTCC 259
              || || || ||||| |||||||| |||   || ||||| ||||| |||||| | |   ||
Db        198 CGCAGGCCCAAGGTGAACTTTTCAAAAGTAATAAGCGAGGAGCAGACGCTTATTGCTACC 257

Qy        260 AACGCGTACCCGGAGTTCCAGATTACCTTTTATAATACTCAAAATGCCGTACACAGTTTG 319
                 ||||| || || ||||| ||||| |||||||| || ||||||||||| ||     |
Db        258 CGGGCGTATCCAGAATTCCAAATTACATTTTATAACACGCAAAATGCCGTGCATTCGCTT 317

Qy        320 GCTGGAGGTTTGAGAGCATTAGAATTGGAATATCTGATGCTACAAGTTCCCTATGGATCG 379
              || || || ||| || | |||||| |||||||||||||| | ||| ||||||| |||||
Db        318 GCAGGTGGATTGCGATCTTTAGAACTGGAATATCTGATGATGCAAATTCCCTACGGATCA 377

Qy        380 CCGACATATGATATAGGTGGGAACTTTGCAGCACATTTGTTCAAAGGCAGGGATTACGTG 439
                ||| ||||| ||||| ||||| |||||| | ||| ||||||| | | | |  || ||
Db        378 TTGACTTATGACATAGGCGGGAATTTTGCATCGCATCTGTTCAAGGGACGAGCATATGTA 437

Qy        440 CATTGCTGTATGCCCAATCTGGACATACGAGATATAATGAGGCACGAAGGACAAAAGGAC 499
              || |||||||||||||| |||||| | ||||| || ||| |||||||||| || || |||
Db        438 CACTGCTGTATGCCCAACCTGGACGTTCGAGACATCATGCGGCACGAAGGCCAGAAAGAC 497

Qy        500 TCAATTGAGATGTATTTGTCCAGATTGTCTCGTTCTAACAAGGTAATTCCTGAGTTTCAA 559
                 |||||  | ||  | || ||  |     |       ||   | | ||  | || |||
Db        498 AGTATTGAACTATACCTTTCTAGGCTAGAGAGAGGGGGGAAAACAGTCCCCAACTTCCAA 557

Qy        560 AGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAAGTCTGCTGCTCTAAAACTTTT 619
              | ||| || ||| |||| || ||||||  |||  | || |    |||    || |||||
Db        558 AAGGAAGCATTTGACAGATACGCAGAAATTCCTGAAGACGCTGTCTGTCACAATACTTTC 617

Qy        620 CAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGAAGATACGCTGTTGCTCTGCAC 679
              |||      |||   || |||    || |    || |||   |  ||  |||| || |||
Db        618 CAGACAATGCGACATCAGCCGATGCAGCAATCAGGCAGAGTGTATGCCATTGCGCTACAC 677

Qy        680 AGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCGTTAATATCTAAGAATATACAT 739
              ||  | ||||| || || |   ||||||| || || ||  |  |    || ||    |||
Db        678 AGCATATATGACATACCAGCCGATGAGTTCGGGGCGGCACTCTTGAGGAAAAATGTCCAT 737

Qy        740 GTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTACTAGACCAGACGGAGGTTACG 799
                 || ||||| |||| |   ||  | ||     |  | || ||  |  |  | || |
Db        738 ACGTGCTATGCCGCTTTCCACTTCTCTGAGAACCTGCTTCTTGAAGATTCATACGTCAAT 797

Qy        800 CTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGATGATGTTTCTTTTTTCTTTGCT 859
               |  | |||||   |||   |||     | || || ||  |  |  | ||||  |||||
Db        798 TTGGACGAAATCAACGCGTGTTTTTCGCGCGATGGAGACAAGTTGACCTTTTCTTTTGCA 857

Qy        860 GATGAAAGTACTTTAAATTATAGTCATAAATACAAAAATATCTTGCATTATGTAGTTAAA 919
                 || |||||| | |||||| ||||||  ||    |||||  |  | |||||    |||
Db        858 TCAGAGAGTACTCTTAATTATTGTCATAGTTATTCTAATATTCTTAAGTATGTGTGCAAA 917

Qy        920 TCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAGGAATTTTTAGTCACTAGGGTT 979
               ||||||| || || |||| ||||   |||||| | ||||| ||||||||||| || |||
Db        918 ACTTACTTCCCGGCCTCTAATAGAGAGGTTTACATGAAGGAGTTTTTAGTCACCAGAGTT 977

Qy        980 AATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTATATTCTGTACAAGAGTGTTAGA 1039
              ||||| ||||||||||| ||| | | | ||||||| | | || |||||||  ||||
Db        978 AATACCTGGTTTTGTAAGTTTTCTAGAATAGATACTTTTCTTTTGTACAAAGGTGTGGCC 1037

Qy       1040 CAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATGGAAGACGCCTTTGCTTACAAG 1099
              ||   | |    |||||||| ||||| |||   || ||||||||||| |    ||||||
Db       1038 CATAAAAGTGTAGATAGTGAGCAGTTTTATACTGCAATGGAAGACGCATGGCATTACAAA 1097

Qy       1100 AAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTTAGAGACACGGCTTCGGTTAAC 1159
              || ||  | || |||| |||||  || |||    || ||   ||  |  | || || ||
Db       1098 AAGACTCTTGCAATGTGCAACAGCGAGAGAATCCTCCTTGAGGATTCATCATCAGTCAAT 1157

Qy       1160 TTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCGCTGTTTGAGGGTTCTATTACC 1219
              |  ||||| || || |||| ||| ||||| || |||||  | || ||   |||| |
Db       1158 TACTGGTTTCCCAAAATGAGGGATATGGTCATCGTACCATTATTCGACATTTCTTTGGAG 1217

Qy       1220 AGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGTGACTTCGTTTACACAGTGCTT 1279
              |  |  |||| |||  | |  || ||| | ||       || ||||| |  |||||||||
Db       1218 ACTAGTAAGAGGACGCGCAAGGAAGTCTTAGTGTCCAAGGATTTCGTGTTTACAGTGCTT 1277

Qy       1280 AATCATATCAGAACATATCAAGCCAAAGCGTTAACTTACCAGAACGTATTATCTTTCGTG 1339
              || || ||  ||||||| || || |||||  ||  |      || || || || || ||
Db       1278 AACCACATTCGAACATACCAGGCGAAAGCTCTTACATACGCAAATGTTTTGTCCTTTGTC 1337

Qy       1340 GAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACTGCTAGGTCTGAATGGGATGTA 1399
              || || ||  ||||  | || || || || ||||| || || ||||| |||||||||||
Db       1338 GAATCGATTCGATCGAGGGTAATCATTAACGGTGTGACAGCGAGGTCCGAATGGGATGTG 1397

Qy       1400 GATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTCTTGCAGACTAAGCTGGCTGCG 1459
              || ||| |  |  | ||| ||||||| ||||| ||   | |||| |||||||| || |
Db       1398 GACAAATCTTTGTTACAATCCTTGTCCATGACGTTTTACCTGCATACTAAGCTTGCCGTT 1457

Qy       1460 CTTCAAGACGATATAGTAATGGGAAAGTTTCGGTGCTTGGATAAGACCACTTCTGAACTT 1519
              ||  | || ||  || | ||  | |||||| |   |      || ||    |   | | |
Db       1458 CTAAAGGATGACTTACTGATTAGCAAGTTTAGTCTCGGTTCGAAAACGGTGTGCCAGCAT 1517
```

```
Qy        1520 ATTTGGGATGAGGTGGGCAAATTTTTTGGAAACGTTTTCCCCACTATCAAAGAGAGATTG 1579
Db        1518 GTGTGGGATGAGATTTCGCTGGCGTTTGGGAACGCATTTCCCTCCGTGAAAGAGAGGCTC 1577
Qy        1580 GTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTGAAGATCAAGATCCCAGATCTG 1639
Db        1578 TTGAACAGGAAACTTATCAGAGTGGCAGGCGACGCATTAGAGATCAGGGTGCCTGATCTA 1637
Qy        1640 TATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACCAAGTCTGAGGAGTTACCGCAT 1699
Db        1638 TATGTGACCTTCCACGACAGATTAGTGACTGAGTACAAGGCCTCTGTGGACATGCCTGCG 1697
Qy        1700 CTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATGTACGACGCGTTATCAGAATTA 1759
Db        1698 CTTGACATTAGGAAGAAGATGGAAGAAACGGAAGTGATGTACAATGCACTTTCAGAGTTA 1757
Qy        1760 TCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAGTTCAAAGACATGTGCAAGGCT 1819
Db        1758 TCGGTGTTAAGGGAGTCTGACAAATTCGATGTTGATGTTTTTCCCAGATGTGCCAATCT 1817
Qy        1820 TTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTTGCAGTGGCCGAGAATAGAAGC 1879
Db        1818 TTGGAAGTTGACCCAATGACGGCAGCGAAGGTTATAGTCGCGGTCATGAGCAATGAGAGC 1877
Qy        1880 GGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAATGTGGCTAAGGCTCT------T 1933
Db        1878 GGTCTGACTCTCACATTTGAACGACCTACTGAGGCGAATGTTGCGCTAGCTTTACAGGAT 1937
Qy        1934 AAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCGACATCCGAAGAGGTGAACGTA 1993
Db        1938 CAAGAGAAGGCTTCAGAAGGTGCTTTGGTAGTTACCTCAAGAGAAGTTGAAGAACCGTCC 1997
Qy        1994 AATAAATTTTCTATTGCTGAGAAAGGGAGATTGCCTGTGTGTGCAGAAAGTCATGGTTTG 2053
Db        1998 ATGAAGGGTTCGATGGCCAGAGGAGAGTTACAATTAGCTGGTCTTGCTGGAGATCATCCG 2057
Qy        2054 ACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTCAACGATTTCCATAAGGCTTGC 2113
Db        2058 GAGTCGTCCTATTCTAAGAACGAGGAGATAGAGTCTTTAGAGCAGTTTCATATGGCAACG 2117
Qy        2114 GTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTCTACACTGGCTCACTCAAAGTT 2173
Db        2118 GCAGATTCGTTAATTCGTAAGCAGATGAGCTCGATTGTGTACACGGGTCCGATTAAAGTT 2177
Qy        2174 CAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCGTTGTCCGCCACTGTATCAAAT 2233
Db        2178 CAGCAAATGAAAAACTTTATCGATAGCCTGGTAGCATCACTATCTGCTGCGGTGTCGAAT 2237
Qy        2234 CTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCTGATTCCAGGGAGAAAGTTGGT 2293
Db        2238 CTCGTCAAGATCCTCAAAGATACAGCTGCTATTGACCTTGAAACCCGTCAAAAGTTTGGA 2297
Qy        2294 GTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCTGCGGCCAAAGGTCATTCATGG 2353
Db        2298 GTCTTGGATGTTGCATCTAGGAAGTGGTTAATCAAACCAACGGCCAAGAGTCATGCATGG 2357
Qy        2354 GGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCACTTCTATCTTATGAAGGAGAT 2413
Db        2358 GGTGTTGTTGAAACCCACGCGAGGAAGTATCATGTGGCGCTTTTGGAATATGATGAGCAG 2417
Qy        2414 AGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTATCATCTGATACAATGGTATAT 2473
Db        2418 GGTGTGGTGACATGCGATGATTGGAGAAGAGTAGCTGTCAGCTCTGAGTCTGTTGTTTAT 2477
Qy        2474 TCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATGAGAGACGGTGAACCCCACGAA 2533
Db        2478 TCCGACATGGCGAAACTCAGAACTCTGCGCAGACTGCTTCGAAACGGAGAACCGCATGTC 2537
Qy        2534 CCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGTTGTGGAAAGTACAAAGGAGAT 2593
Db        2538 AGTAGCGCAAAGGTTGTTCTTGTGGACGGAGTTCCGGGCTGTGGAAAAACCAAAGAAATT 2597
Qy        2594 TTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTTCCTGGAAAACAAGCTGCTGCT 2653
```

```
Db        2598 CTTTCCAGGGTTAATTTTGATGAAGATCTAATTTTAGTACCTGGGAAGCAAGCCGCGGAA 2657
Qy        2654 ATGATCAGAAGAAGGGCTAATTCATCTGGACTGATAAGAGCCACAATGGACAATGTGAGA 2713
Db        2658 ATGATCAGAAGACGTGCGAATTCCTCAGGGATTATTGTGGCCACGAAGGACAACGTTAAA 2717
Qy        2714 ACGGTAGATTCACTTCTAATGCAT---------CCAAAACCGCGATCACACAAGAGGCTT 2764
Db        2718 ACCGTTGATTCTTTCATGATGAATTTTGGGAAAAGCACACGCTGTCAGTTCAAGAGGTTA 2777
Qy        2765 TTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTTAACTTCCTGGTGCTTATCTCT 2824
Db        2778 TTCATTGATGAAGGGTTGATGTTGCATACTGGTTGTGTTAATTTTCTTGTGGCGATGTCA 2837
Qy        2825 GGTTGCGACATCGCATACATTTACGGAGATACACAGCAGATTCCTTTCATTAACAGAGTT 2884
Db        2838 TTGTGCGAAATTGCATATGTTTACGGAGACACACAGCAGATTCCATACATCAATAGAGTT 2897
Qy        2885 CAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAAGTGGATGAAGTTGAGATGAGG 2944
Db        2898 TCAGGATTCCCGTACCCCGCCCATTTTGCCAAATTGGAAGTTGACGAGGTGGAGACACGC 2957
Qy        2945 AGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTCCTACAATCGAAGTACGAAGGA 3004
Db        2958 AGAACTACTCTCCGTTGTCCAGCCGATGTCACACATTATCTGAACAGGAGATATGAGGGC 3017
Qy        3005 GCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCATCTGAGATGATAGGCGGTAAG 3064
Db        3018 TTTGTCATGAGCACTTCTTCGGTTAAAAAGTCTGTTTCGCAGGAGATGGTCGGCGGAGCC 3077
Qy        3065 GGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGGAAAATTGTAACTTTCACTCAGGCT 3124
Db        3078 GCCGTGATCAATCCGATCTCAAAACCCTTGCATGGCAAGATCCTGACTTTTACCCAATCG 3137
Qy        3125 GATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTGAACACCGTTCATGAGATCCAA 3184
Db        3138 GATAAAGAAGCTCTGCTTTCAAGAGGGTATTCAGATGTTCACACTGTGCATGAAGTGCAA 3197
Qy        3185 GGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACGGCAACTCCACTGACTCTGATT 3244
Db        3198 GGCGAGACATACTCTGATGTTTCACTAGTTAGGTTAACCCCTACACCAGTCTCCATCATT 3257
Qy        3245 TCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGACACACAAAGAGCTTCAAATAT 3304
Db        3258 GCAGGAGACAGCCCACATGTTTTGGTCGCATTGTCAAGGCACACCTGTTCGCTCAAGTAC 3317
Qy        3305 TACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGTGATTTGTCTTCTTTAAGCTCC 3364
Db        3318 TACACTGTTGTTATGGATCCTTTAGTTAGTATCATTAGAGATCTAGAGAAACTTAGCTCG 3377
Qy        3365 TTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGATAGCAATTACAGATGGATGCA 3424
Db        3378 TACTTGTTAGATATGTATAAGGTCGATGCAGGAACACAATAGCAATTACAGATTGACTCG 3437
Qy        3425 GTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAATCAGGAGACTTTCCAGATCTA 3484
Db        3438 GTGTTCAAAGGTTCCAATCTTTTTGTTGCAGCGCCAAAGACTGGTGATATTTCTGATATG 3497
Qy        3485 CAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACTATACTTAACAAGTATGATGCT 3544
Db        3498 CAGTTTTACTATGATAAGTGTCTCCCAGGCAACAGCACCATGATGAATAATTTTGATGCT 3557
Qy        3545 GTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAGGATTGTGTTCTTGATTTTTCC 3604
Db        3558 GTTACCATGAGGTTGACTGACATTTCATTGAATGTCAAAGATTGCATATTGGATATGTCT 3617
Qy        3605 AAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTAGAGCCAGTTTTGCGTACCGCG 3664
Db        3618 AAGTCTGTTGCTGCGCCTAAGGATCAAATCAAACCACTAATACCTATGGTACGAACGGCG 3677
Qy        3665 GCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTGGTTGCAATGATTAAAAGAAAT 3724
```

```
Db        3678 GCAGAAATGCCACGCCAGACTGGACTATTGGAAAATTTAGTGGCGATGATTAAAAGGAAC 3737

Qy        3725 TTCAACGCACCAGACCTGACGGGGACGATTGACATTGAGAGCACCGCATCTGTTGTAGTA 3784
               || |||||||| ||  || | || |  ||||| ||||| |  || |||||| | || |||
Db        3738 TTTAACGCACCCGAGTTGTCTGGCATCATTGATATTGAAAATACTGCATCTTTAGTTGTA 3797

Qy        3785 GATAAGTTTTTTGATAGCTATTTTATTAAAAAAGAAAAATACACAAAAAATATTGCTGGA 3844
               ||||||||||||||||| |||||  ||||| || ||| | |  |||| || | || |
Db        3798 GATAAGTTTTTTGATAGTTATTTGCTTAAAGAAAAAAGAAAACCAAATAAAAATGTTTCT 3857

Qy        3845 GTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAACAGGAAAGAAGTACTATTGGAC 3904
                || | |  |  || ||  | |  |||||||| |||||   | || | |||  | | | |
Db        3858 TTGTTCAGTAGAGAGTCTCTCAATAGATGGTTAGAAAAGCAGGAACAGGTAACAATAGGC 3917

Qy        3905 GACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATCGATCAGTACAAGCACATGATC 3964
                |  | ||  | |   |||||  |||| |||| ||  | ||||||||||  ||||||||
Db        3918 CAGCTCGCAGATTTTGATTTTGTAGATTTGCCAGCAGTTGATCAGTACAGACACATGATT 3977

Qy        3965 AAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAGAATGAATACCCTGCTCTGCAA 4024
               || || ||||| || || |||||||||  |||||| || |  || ||||| ||| ||||
Db        3978 AAAGCACAACCCAAGCAAAAATTGGACACTTCAATCCAAACGGAGTACCCGGCTTTGCAG 4037

Qy        4025 ACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTGGCCGGTTTCT---CAGAGCTT 4081
               || ||||| |||||||| ||  ||||||| |  || || | |   || |     ||||||
Db        4038 ACGATTGTGTACCATTCAAAAAAGATCAATGCAATATTTGGCCCGTTGTTTAGTGAGCTT 4097

Qy        4082 ACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTTCTTTTCTTTACTAGGAAAACT 4141
               || |||    | || ||     ||||||| |  |  ||| | || || || || || ||
Db        4098 ACTAGGCAATTACTGGACAGTGTTGATTCGAGCAGATTTTTGTTTTTCACAAGAAAGACA 4157

Qy        4142 CCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCGCACGTTCCTATGGATGTGTTA 4201
               ||||  |||||| | || || |||   |||||||||   || || || |||||||| ||
Db        4158 CCAGCGCAGATTGAGGATTTCTTCGGAGATCTCGACAGTCATGTGCCGATGGATGTCTTG 4217

Qy        4202 GAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAGTTTCATTGTGCTGTAGAGTAT 4261
               || |||||||| || || || || || ||||| || || || ||||| ||||| || ||
Db        4218 GAGCTGGATATATCAAAATACGACAAATCTCAGAATGAATTCCACTGTGCAGTAGAATAC 4277

Qy        4262 GAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCCGAAGTGTGGAAACAAGGGCAC 4321
               || || |||  |||||||||| |  | |  || ||||  ||||| ||||||||||||||
Db        4278 GAGATCTGGCGAAGATTGGGTTTTGAAGACTTCTTGGGAGAAGTTTGGAAACAAGGGCAT 4337

Qy        4322 AGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAGACATGTCTGTGGTATCAAAGG 4381
               || || || ||  | |||||||| |  || || || || || ||  | |||||||||||
Db        4338 AGAAAGACCACCCTCAAGGATTATACCGCAGGTATAAAAACTTGCATCTGGTATCAAAGA 4397

Qy        4382 AAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTTATAATAGCAGCTTGCTTGGGT 4441
               || ||||| || || || || ||||| || || ||||| || || || || || ||||
Db        4398 AAGAGCGGGGACGTCACGACGTTCATTGGAAACACTGTGATCATTGCTGCATGTTTGGCC 4457

Qy        4442 TCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTTTGTGGAGACGATTCCGTTTTG 4501
               || ||| | |||||||| ||  | || ||||| || ||||| || ||||||    |  ||
Db        4458 TCGATGCTTCCGATGGAGAAAATAATCAAAGGAGCCTTTTGCGGTGACGATAGTCTGCTG 4517

Qy        4502 TATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCATGTGCTAATCTCATGTGGAAT 4561
               || |||||||||||||  || || || ||  | ||    |  || ||||| |||||||||
Db        4518 TACTTTCCAAAGGGTTGTGAGTTTCCGGATGTGCAACACTCCGCGAATCTTATGTGGAAT 4577

Qy        4562 TTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTTTGTGGTAGATACATCATACAC 4621
               ||||| || ||||||| || |||   ||| || |||||||| || |||||  | |||||
Db        4578 TTTGAAGCAAAACTGTTTAAAAAACAGTATGGATACTTTTGCGGAAGATATGTAATACAT 4637

Qy        4622 CATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAGTTGATCTCCAAACTTGGGGCA 4681
               || || |  |||   || ||||||||  ||||  | ||||||||||| |||||||| ||
Db        4638 CACGACAGAGGATGCATTGTGTATTACGATCCCCTAAAGTTGATCTCGAAACTTGGTGCT 4697

Qy        4682 AAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGGGTGTCTTTGTGCGATGTTGCT 4741
               ||||| ||||||||||  || ||||| || ||||| ||   |||| | || |||||||||
Db        4698 AAACACATCAAGGATTGGGAACACTTGGAGGAGTTCAGAAGGTCTCTTTGTGATGTTGCT 4757

Qy        4742 TGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTGAACGCAGCTATCAAGGAGGTT 4801
                 |||| |    |||   ||       |   | ||| || |||  ||| |   |||||||
Db        4758 GTTTCGTT---GAACAATTGTGCGTATTACACACAGTTGGACGACGCTGTATGGGAGGTT 4814

Qy        4802 CATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGTGTTAACAAATTTTTGTGTGAT 4861
               ||||| |||||   |   |||||||||| || |||  || |    || | ||||| ||||
Db        4815 CATAAGACCGCCCCTCCAGGTTCGTTTGTTTATAAAAGTCTGGTGAAGTATTTGTCTGAT 4874

Qy        4862 AAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAGTCTCAGAGATACTGTCAAAAT 4921
               ||| || | ||||||| ||||||| || |||||| |   | | | ||  |  || || ||
Db        4875 AAAGTTCTTTTTAGAAGTTTGTTTATAGATGGCTCTAGTTGTTAAAGGAAAAGTGAATAT 4934

Qy        4922 TAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACTTCCGGCATTCATGACTAAGGT 4981
                |  ||||| || || ||  | |||  |||  ||||  | ||| |  |  | ||    ||
Db        4935 CAATGAGTTTATCGACCTGACAAAAATGGAGAAGATCTTACCGTCGATGTTTACCCCTGT 4994

Qy        4982 CAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGCTGTTAAGAATGATAGTCTTTC 5041
                ||||||||||     || |  || || || || |||| |  | |||||||     | ||
Db        4995 AAAGAGTGTTATGTGTTCCAAAGTTGATAAAATAATGGTTCATGAGAATGAGTCATTGTC 5054

Qy        5042 TGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAAAGGGTATGTGTGCTTAGCTGA 5101
                || ||  |  | |||||||| |||||| |  || | |  || || || || ||||| |
Db        5055 AGAGGTGAACCTTCTTAAAGGAGTTAAGCTTATTGATAGTGGATACGTCTGTTTAGCCGG 5114

Qy        5102 TTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTGCCGTGGTGGTGTCAGTGTTTG 5161
               |||||| ||  | || ||||||||  | || || || ||| | || ||||| || || ||
Db        5115 TTTGGTCGTCACGGGCGAGTGGAACTTGCCTGACAATTGCAGAGGAGGTGTGAGCGTGTG 5174

Qy        5162 TATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAACGCTGGGTGCGTATCACGCCCC 5221
               | | || || || || ||| ||||     | || || |  || ||  | ||  || |  |
Db        5175 TCTGGTGGACAAAAGGATGGAAAGAGCCGACGAGGCCACTCTCGGATCTTACTACACAGC 5234

Qy        5222 TGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAATTATTCAATAACATCCGAGGA 5281
                |||   || || |  |||   || ||| |  | || |||||| | |||||  || ||||
Db        5235 AGCTGCAAAGAAAAGATTTCAGTTCAAGGTCGTTCCCAATTATGCTATAACCACCCAGGA 5294

Qy        5282 TGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAAAGGAGTGGCTATGGAAGAAGG 5341
                ||   |||  ||   ||||||||| ||||| ||||| | |   |||   |||  ||  ||
Db        5295 CGCGATGAAAAACGTCTGGCAAGTTTTAGTTAATATTAGAAATGTGAAGATGTCAGCGGG 5354

Qy        5342 ATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGTAGTACATAAAAATAATGTAAG 5401
                | ||||||  | ||| ||||||| || ||  | ||| | ||  ||| ||||||| |||
Db        5355 TTTCTGTCCGCTTTCTCTGGAGTTTGTGTCGGTGTGTATTGTTTATAGAAATAATATAAA 5414

Qy        5402 AAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGGCTCGCCAATTGAACTCACTGA 5461
               |  ||||||||| ||    |||   |  |||| ||||||   ||| || ||||| || ||
Db        5415 ATTAGGTTTGAGAGAGAAGATTACAAACGTGAGAGACGGAGGGCCCATGGAACTTACAGA 5474

Qy        5462 AAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGCTGTGAAACTCGAAAAGGTTC 5520
               | | ||||| |||||| |||| || || || ||| |  | |  || | |||| |||
Db        5475 AGAAGTCGTTGATGAGTTCATGGAAGATGTCCCTATGTCGATCAGGCTTGCAAAGTTTC 5533

Search completed: July 28, 2005, 18:44:30
Job time : 2474.02 secs
```

```
                    GenCore version 5.1.6
           Copyright (c) 1993 - 2005  Compugen Ltd.


OM nucleic - nucleic search, using sw model

Run on:         July 28, 2005, 08:29:34 ; Search time 517.084 Seconds
                                           (without alignments)
                                          15733.537 Million cell updates/sec

Title:          US-09-551-494-5_COPY_534_5505
Perfect score:  4972
Sequence:       1 ctaacaaggtaattcctgag..........tgaagtaccaatggctgtga 4972

Scoring table:  IDENTITY_NUC
                Gapop 10.0 , Gapext 1.0

Searched:       1202784 seqs, 818138359 residues

Total number of hits satisfying chosen parameters:      2405568

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
                 Maximum Match 100%
                 Listing first 45 summaries

Database :       Issued_Patents_NA:*
                1:  /cgn2_6/ptodata/1/ina/5A_COMB.seq:*
                2:  /cgn2_6/ptodata/1/ina/5B_COMB.seq:*
                3:  /cgn2_6/ptodata/1/ina/6A_COMB.seq:*
                4:  /cgn2_6/ptodata/1/ina/6B_COMB.seq:*
                5:  /cgn2_6/ptodata/1/ina/PCTUS_COMB.seq:*
                6:  /cgn2_6/ptodata/1/ina/backfiles1.seq:*

      Pred. No. is the number of results predicted by chance to have a
      score greater than or equal to the score of the result being printed,
      and is derived by analysis of the total score distribution.

                                   SUMMARIES
                  %
Result            Query
  No.   Score     Match Length DB  ID                      Description
  -----------------------------------------------------------------------
     1  2034.2    40.9    6395  3  US-09-259-741-1          Sequence 1, Appli
     2  2034.2    40.9    6395  3  US-09-037-751-1          Sequence 1, Appli
     3  2034.2    40.9    6395  3  US-09-466-422-1          Sequence 1, Appli
     4  2034.2    40.9    6395  4  US-09-962-527-1          Sequence 1, Appli
     5  2034.2    40.9    6439  3  US-09-259-741-2          Sequence 2, Appli
     6  2034.2    40.9    6439  3  US-09-037-751-2          Sequence 2, Appli
     7  2034.2    40.9    6439  3  US-09-466-422-2          Sequence 2, Appli
     8  2034.2    40.9    6439  4  US-09-962-527-2          Sequence 2, Appli
     9    2031    40.8    6395  2  US-08-687-559-2          Sequence 2, Appli
    10    2031    40.8    6395  4  US-09-401-415-2          Sequence 2, Appli
    11    2031    40.8    6425  3  US-09-259-741-3          Sequence 3, Appli
    12    2031    40.8    6425  3  US-09-037-751-3          Sequence 3, Appli
    13    2031    40.8    6425  3  US-09-466-422-3          Sequence 3, Appli
    14    2031    40.8    6425  4  US-09-962-527-3          Sequence 3, Appli
    15    2031    40.8    6446  3  US-09-259-741-5          Sequence 5, Appli
    16    2031    40.8    6446  3  US-09-037-751-5          Sequence 5, Appli
    17    2031    40.8    6446  3  US-09-466-422-5          Sequence 5, Appli
    18    2031    40.8    6446  4  US-09-962-527-5          Sequence 5, Appli
    19    2031    40.8    6475  3  US-09-259-741-4          Sequence 4, Appli
    20    2031    40.8    6475  3  US-09-037-751-4          Sequence 4, Appli
    21    2031    40.8    6475  3  US-09-466-422-4          Sequence 4, Appli
    22    2031    40.8    6475  4  US-09-962-527-4          Sequence 4, Appli
    23  2029.4    40.8    7685  3  US-09-502-710-22         Sequence 22, Appl
    24  2029.4    40.8    7685  3  US-09-502-710-25         Sequence 25, Appl
    25  2029.4    40.8    7685  3  US-09-502-711-22         Sequence 22, Appl
    26  2029.4    40.8    7685  3  US-09-502-711-25         Sequence 25, Appl
    27  2029.4    40.8    7685  4  US-09-565-616A-1         Sequence 1, Appli
    28  2029.4    40.8    7686  3  US-09-502-710-23         Sequence 23, Appl
    29  2029.4    40.8    7686  3  US-09-502-711-23         Sequence 23, Appl
    30  2029.4    40.8    7687  3  US-09-502-710-24         Sequence 24, Appl
    31  2029.4    40.8    7687  3  US-09-502-711-24         Sequence 24, Appl
    32  2029.4    40.8    7688  3  US-09-502-710-27         Sequence 27, Appl
    33  2029.4    40.8    7688  3  US-09-502-711-27         Sequence 27, Appl
    34  2026.2    40.8    7686  3  US-09-502-710-26         Sequence 26, Appl
    35  2026.2    40.8    7686  3  US-09-502-711-26         Sequence 26, Appl
    36  2026.2    40.8    7686  4  US-09-565-616A-2         Sequence 2, Appli
    37  2026.2    40.8    7926  3  US-09-500-554-1          Sequence 1, Appli
    38  2026.2    40.8    7926  3  US-09-726-648-1          Sequence 1, Appli
    39  2026.2    40.8    7926  4  US-10-119-330-1          Sequence 1, Appli
    40   693.2    13.9    1425  1  US-08-488-672-4          Sequence 4, Appli
    41     690    13.9    1425  4  US-08-708-354-4          Sequence 4, Appli
    42   286.4     5.8    2173  2  US-08-553-619B-6         Sequence 6, Appli
    43   263.2     5.3    1825  1  US-08-176-414B-1         Sequence 1, Appli
    44   263.2     5.3    1825  2  US-08-336-724-1          Sequence 1, Appli
    45   260.8     5.2     807  4  US-09-565-616A-3         Sequence 3, Appli


                                 ALIGNMENTS


RESULT 1
US-09-259-741-1
; Sequence 1, Application US/09259741
; Patent No. 6033895
;  GENERAL INFORMATION:
;    APPLICANT:  GARGER, STEPHEN
;    APPLICANT:  HOLTZ, R. BARRY
;    APPLICANT:  McCULLOCH, MICHAEL
;    APPLICANT:  TURPEN, THOMAS
;    TITLE OF INVENTION:  A PROCESS FOR ISOLATING AND
;    TITLE OF INVENTION:  PURIFYING VIRUSES SOLUBLE PROTEINS AND PEPTIDES FROM PLANT
;    TITLE OF INVENTION:  SOURCES
;    NUMBER OF SEQUENCES:  5
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  Howrey & Simon
;      STREET:  1299 Pennsylvania Avenue N.W.
;      CITY:  Washington
;      STATE:  DC
;      COUNTRY:  USA
;      ZIP:  20004
;    COMPUTER READABLE FORM:
;      MEDIUM TYPE:  Diskette
;      COMPUTER:  IBM Compatible
;      OPERATING SYSTEM:  DOS
;      SOFTWARE:  FastSEQ for Windows Version 2.0
;    CURRENT APPLICATION DATA:
;      APPLICATION NUMBER:  US/09/259,741
;      FILING DATE:  February 25, 1999
;      CLASSIFICATION:
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:  09/037,751
;      FILING DATE:  March 10, 1998
;    ATTORNEY/AGENT INFORMATION:
;      NAME:  Halluin, Albert P
;      REGISTRATION NUMBER:  25,277
;      REFERENCE/DOCKET NUMBER:  00801.0140.US01
;    TELECOMMUNICATION INFORMATION:
;      TELEPHONE:  650-463-8100
;      TELEFAX:  650-463-8400
;      TELEX:
;  INFORMATION FOR SEQ ID NO:  1:
;    SEQUENCE CHARACTERISTICS:
;      LENGTH:  6395 base pairs
;      TYPE:  nucleic acid
;      STRANDEDNESS:  single
;      TOPOLOGY:  unknown
;    MOLECULE TYPE:  Genomic RNA
US-09-259-741-1

  Query Match             40.9%;  Score 2034.2;  DB 3;  Length 6395;
```

```
  Best Local Similarity   44.4%;  Pred. No. 0;
  Matches 2214;  Conservative  957;  Mismatches 1793;  Indels   21;  Gaps    4;

Qy          6 AAGGTAATTCCTGAGTTTCAAAGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAA 65
              ||   | : ||  | :: |||| ||| || ::: |||| :| ||||||  :||  | ||
Db        537 AAAACAGUCCCCAACUUCCAAAAGGAAGCAUUUGACAGAUACGCAGAAAUUCCUGAAGAC 596

Qy         66 GTCTGCTGCTCTAAAACTTTTCAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGA 125
              |    |:|    || ||::: |||      |||   || |||    || |    || |||
Db        597 GCUGUCUGUCACAAUACUUUCCAGACAAUGCGACAUCAGCCGAUGCAGCAAUCAGGCAGA 656

Qy        126 AGATACGCTGTTGCTCTGCACAGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCG 185
                 :| ||  ::|| |: |||||  : :|:|| |: || |   |:|||:: || || ||
Db        657 GUGUAUGCCAUUGCGCUACACAGCAUAUAUGACAUACCAGCCGAUGAGUUCGGGGCGGCA 716

Qy        186 TTAATATCTAAGAATATACATGTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTA 245
               :  :    || ||: : ||:   :| :|:|| ||:: |   ::  | ||     :  :
Db        717 CUCUUGAGGAAAAAUGUCCAUACGUGCUAUGCCGCUUUCCACUUCUCCGAGAACCUGCUU 776

Qy        246 CTAGACCAGACGGAGGTTACGCTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGAT 305
              |: ||  |  |  | |:  |  :  | ||||:   |||   :::     | || || ||
Db        777 CUUGAAGAUUCAUACGUCAAUUUGGACGAAAUCAACGCGUGUUUUUCGCGCGAUGGAGAC 836

Qy        306 GATGTTTCTTTTTTCTTTGCTGATGAAAGTACTTTAAATTATAGTCATAAATACAAAAAT 365
               |  :  | ::::  :::||    || ||:||: : ||::|: |:||:|  :|    ||:
Db        837 AAGUUGACCUUUUCUUUUGCAUCAGAGAGUACUCUUAAUUAUUGUCAUAGUUAUUCUAAU 896

Qy        366 ATCTTGCATTATGTAGTTAAATCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAG 425
              |:  :  | :|:|:    ||| |::||:: || || :|:| :|||   |:::|| : |||
Db        897 AUUCUUAAGUAUGUGUGCAAAACUUACUUCCCGGCCUCUAAUAGAGAGGUUUACAUGAAG 956

Qy        426 GAATTTTTAGTCACTAGGGTTAATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTAT 485
              || :::::||:||| || |::||:|| :||::::|:|| ::: | | | :|||:|| : :
Db        957 GAGUUUUUAGUCACCAGAGUUAAUACCUGGUUUUGUAAGUUUUCUAGAAUAGAUACUUUU 1016

Qy        486 ATTCTGTACAAGAGTGTTAGACAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATG 545
               :: :|:||||  |:|:    ||   | |    ||:||:|| |||:: :|:   || |:|
Db       1017 CUUUUGUACAAAGGUGUGGCCCAUAAAAGUGUAGAUAGUGAGCAGUUUUAUACUGCAAUG 1076

Qy        546 GAAGACGCCTTTGCTTACAAGAAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTT 605
              |||||||| :    ::|||| || ||  : || |:|: |||||  || |||    :| ::
Db       1077 GAAGACGCAUGGCAUUACAAAAAGACUCUUGCAAUGUGCAACAGCGAGAGAAUCCUCCUU 1136

Qy        606 AGAGACACGGCTTCGGTTAACTTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCG 665
                 ||  |  | :| |: || :  :||:: || || |:|| ||| |:||: |: |:|||
Db       1137 GAGGAUUCAUCAUCAGUCAAUUACUGGUUUCCCAAAAUGAGGGAUAUGGUCAUCGUACCA 1196

Qy        666 CTGTTTGAGGGTTCTATTACCAGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGT 725
               : :: ||   ::|: :    |  |  ||||| |||  | |  || |:| : |:
Db       1197 UUAUUCGACAUUUCUUUGGAGACUAGUAAGAGGACGCGCAAGGAAGUCUUAGUGUCCAAG 1256

Qy        726 GACTTCGTTTACACAGTGCTTAATCATATCAGAACATATCAAGCCAAAGCGTTAACTTAC 785
              || ::||: :  ||||:||::|| || |:  |||||:| || || |||||  : || :||
Db       1257 GAUUUCGUGUUUACAGUGCUUAACCACAUUCGAACAUACCAGGCGAAAGCUCUUACAUAC 1316

Qy        786 CAGAACGTATTATCTTTCGTGGAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACT 845
                 || |: :: :|  : |: || :| |:  ||:|  | |: |: |: || ||:|: ||
Db       1317 GCAAAUGUUUUGUCCCUUGUCGAAUCGAUUCGAUCGAGGGUAAUCAUUAACGGUGUGACA 1376

Qy        846 GCTAGGTCTGAATGGGATGTAGATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTC 905
              || |||:| |||:||||:|: || ||| |  :  : ||| ||::|:| |:||| :: : |
Db       1377 GCGAGGUCCGAAUGGGAUGUGGACAAAUCUUUGUUACAAUCCUUGUCCAUGACGUUUUAC 1436

Qy        906 TTGCAGACTAAGCTGGCTGCGCTTCAAGACGATATAGTAATGGGAAAGTTTCGGTGCTTG 965
               :||| ||:||||: || |  |:  | || ||  :| : |:  | |||::: |   |
Db       1437 CUGCAUACUAAGCUUGCCGUUCUAAAGGAUGACUUACUGAUUAGCAAGUUUAGUCUCGGU 1496

Qy        966 GATAAGACCACTTCTGAACTTATTTGGGATGAGGTGGGCAAATTTTTTGGAAACGTTTTC 1025
                 || ||    :   | | : : :||||:||| :          :::|| ||||  ::
Db       1497 UCGAAAACGGUGUGCCAGCAUGUGUGGGAUGAGAUUUCGCUGGCGUUUGGGAACGCAUUU 1556

Qy       1026 CCCACTATCAAAGAGAGATTGGTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTG 1085
              ||| |  : ||||||||| :  :|| |||||||| :: :    |:    |   | ||  :
Db       1557 CCCUCCGUGAAAGAGAGACUCUUGAACAGGAAACUUAUCAGAGUGGCAGGCGACGCAUUA 1616

Qy       1086 AAGATCAAGATCCCAGATCTGTATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACC 1145
               |||:|| | : || ||:|: :|:|: || :   | ||||| :: |:  |:|| :|||
Db       1617 GAGAUCAGGGUGCCUGAUCUAUAUGUGACCUUCCACGACAGAUUAGUGACUGAGUACAAG 1676

Qy       1146 AAGTCTGAGGAGTTACCGCATCTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATG 1205
                 :|:| |||  : ||    |: || |: | |||| |  : |||||| | ||    |:|
Db       1677 GCCUCUGUGGACAUGCCUGCGCUUGACAUUAGGAAGAAGAUGGAAGAAACGGAAGUGAUG 1736

Qy       1206 TACGACGCGTTATCAGAATTATCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAG 1265
              :|| | ||  : :|||| ::|:|  :  : | ||   |:|| || ::|||: : |
Db       1737 UACAAUGCACUUUCAGAGUUAUCGGUGUUAAGGGAGUCUGACAAAUUCGAUGUUGAUGUU 1796

Qy       1266 TTCAAAGACATGTGCAAGGCTTTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTT 1325
              ::     | |:|:|| |  |::: || |::   ||      ||||||    |: |: |:
Db       1797 UUUUCCCAGAUGUGCCAAUCUUUGGAAGUUGACCCAAUGACGGCAGCGAAGGUUAUAGUC 1856

Qy       1326 GCAGTGGCCGAGAATAGAAGCGGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAAT 1385
              || |:       ||:   |||||: : ||:|: || :::||    || || |||| |||:
Db       1857 GCGGUCAUGAGCAAUGAGAGCGGUCUGACUCUCACAUUUGAACGACCUACUGAGGCGAAU 1916

Qy       1386 GTGGCTAAGGCTCT------TAAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCG 1439
              |: ||    ||: :      : ||   | ||| :| || |  |   :     ::    |
Db       1917 GUUGCGCUAGCUUUACAGGAUCAAGAGAAGGCUUCAGAAGGUGCAUUGGUAGUUACCUCA 1976

Qy       1440 ACATCCGAAGAGGTGAACGTAAATAAATTTTCTATTGCTGAGAAAGGGAGATTGCCTGTG 1499
              | |   |  || |        |  ||   ::| |:  ||     || |  |      |
Db       1977 AGAGAAGUUGAAGAACCGUCCAUGAAGGGUUCGAUGGCCAGAGGAGAGUUACAAUUAGCU 2036

Qy       1500 TGTGCAGAAAGTCATGGTTTGACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTC 1559
               |:   |   |  |:  :  |  |    |  | :   || || ||||| : |||:|  :
Db       2037 GGUCUUGCUGGAGAUCAUCCGGAGUCGUCCUAUUCUAAGAACGAGGAGAUAGAGUCUUUA 2096

Qy       1560 AACGATTTCCATAAGGCTTGCGTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTC 1619
               |  | :: ||:| |||    |  ||:    : |::   ||||| |:|   :|| ::|:
Db       2097 GAGCAGUUUCAUAUGGCGACGGCAGAUUCGUUAAUUCGUAAGCAGAUGAGCUCGAUUGUG 2156

Qy       1620 TACACTGGCTCACTCAAAGTTCAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCG 1679
              :|||| ||  |  : ||||::|| ||||:||| |||: : : || ||  :|| ||| :|
Db       2157 UACACGGGUCCGAUUAAAGUUCAGCAAAUGAAAAACUUUAUCGAUAGCCUGGUAGCAUCA 2216

Qy       1680 TTGTCCGCCACTGTATCAAATCTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCT 1739
               : :| ||  | |: :| ||:|:   ||||   |: || ||:  ||  |    :||   :
Db       2217 CUAUCUGCUGCGGUGUCGAAUCUCGUCAAGAUCCUCAAAGAUACAGCUGCUAUUGACCUU 2276

Qy       1740 GATTCCAGGGAGAAAGTTGGTGTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCT 1799
              ||  || |  | ||  ::|| |: : |||:|:  | :  |  |||:|| :  :||||||
Db       2277 GAAACCCGUCAAAAGUUUGGAGUCUUGGAUGUUGCAUCUAGGAAGUGGUUAAUCAAACCA 2336

Qy       1800 GCGGCCAAAGGTCATTCATGGGGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCA 1859
               |||||||  |:||: ||:|||| |::|:        ||  | ||||      :   ||
Db       2337 ACGGCCAAGAGUCAUGCAUGGGGUGUUGUUGAAACCCACGCGAGGAAGUAUCAUGUGGCG 2396

Qy       1860 CTTCTATCTTATGAAGGAGATAGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTA 1919
              |:: :    :|:|| |   |  |  :||:|||       || :|||| || |: ||:|:
Db       2397 CUUUUGGAAUAUGAUGAGCAGGGUGUGGUGACAUGCGAUGAUUGGAGAAGAGUAGCUGUU 2456

Qy       1920 TCATCTGATACAATGGTATATTCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATG 1979
                 :|:||  |  : |: :|::| || |: || || |:|  || :|:| | | |    :
Db       2457 AGCUCUGAGUCUGUUGUUUAUUCCGACAUGGCGAAACUCAGAACUCUGCGCAGACUGCUU 2516

Qy       1980 AGAGACGGTGAACCCCACGAACCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGT 2039
               || |||| ||||| || |    :|  |||||| : |: |::|:||| || |: || ||
Db       2517 CGAAACGGAGAACCGCAUGUCAGUAGCGCAAAGGUUGUUCUUGUGGACGGAGUUCCGGGC 2576

Qy       2040 TGTGGAAAGTACAAAGGAGATTTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTT 2099
              :|:|||||   ||||| |  : ::   ||  :: |: ::||:|| ||: : |: :: |:
Db       2577 UGUGGAAAAACCAAAGAAAUUCUUUCCAGGGUUAAUUUUGAUGAAGAUCUAAUUUUAGUA 2636

Qy       2100 CCTGGAAAACAAGCTGCTGCTATGATCAGAAGAAGGGCTAATTCATCTGGACTGATAAGA 2159
              ||:|| || ||||| || |  |:||:|||||| | || ||::| :| ||  : |:
Db       2637 CCUGGGAAGCAAGCCGCGGAAAUGAUCAGAAGACGUGCGAAUUCCUCAGGGAUUAUUGUG 2696
```

```
Qy     2160 GCCACAATGGACAATGTGAGAACGGTAGATTCACTTCTAATGCAT---------CCAAAA 2210
            ||||| | |||||| |: | ||| |: ||::|  :  : |:| |:            | |
Db     2697 GCCACGAAGGACAACGUUAAAACCGUUGAUUCUUUCAUGAUGAAUUUUGGGAAAAGCACA 2756

Qy     2211 CCGCGATCACACAAGAGGCTTTTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTT 2270
            |   |      ||||||| : :: |::||:||||||::||:| :||| || ||::|:|::
Db     2757 CGCUGUCAGUUCAAGAGGUUAUUCAUUGAUGAAGGGUUGAUGUUGCAUACUGGUUGUGUU 2816

Qy     2271 AACTTCCTGGTGCTTATCTCTGGTTGCGACATCGCATACATTTACGGAGATACACAGCAG 2330
            || :: |: |:|   |: :|    :|||| |: |||:|  :::||||||| |||||||||
Db     2817 AAUUUUCUUGUGGCGAUGUCAUUGUGCGAAAUUGCAUAUGUUUACGGAGACACACAGCAG 2876

Qy     2331 ATTCCTTTCATTAACAGAGTTCAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAA 2390
            |::|| : ||: || ||||::      ::||||:| |||   ||::::|  ||  :| ||
Db     2877 AUUCCAUACAUCAAUAGAGUUUCAGGAUUCCCGUACCCCGCCCAUUUUGCCAAAUUGGAA 2936

Qy     2391 GTGGATGAAGTTGAGATGAGGAGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTC 2450
            |: || || |: ||||   | || || || |:  | :| ||||  ||:|: |    ::
Db     2937 GUUGACGAGGUGGAGACACGCAGAACUACUCUCCGUUGUCCAGCCGAUGUCACACAUUAU 2996

Qy     2451 CTACAATCGAAGTACGAAGGAGCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCA 2510
            |:  |   ||  :| || ||    |: |  | |||::|  | |:  ||   :| |: :|
Db     2997 CUGAACAGGAGAUAUGAGGGCUUUGUCAUGAGCACUUCUUCGGUUAAAAAGUCUGUUUCG 3056

Qy     2511 TCTGAGATGATAGGCGGTAAGGGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGGAAA 2570
               ||||:| : |||||    |  |:  : ||     : :| |||||  :  | || ||
Db     3057 CAGGAGAUGGUCGGCGGAGCCGCCGUGAUCAAUCCGAUCUCAAAACCCUUGCAUGGCAAG 3116

Qy     2571 ATTGTAACTTTCACTCAGGCTGATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTG 2630
            |:  : ||::: || ||  | ||:|||   |   :       |  || :|:    |:|:
Db     3117 AUCCUGACUUUUACCCAAUCGGAUAAAGAAGCUCUGCUUUCAAGAGGGUAUUCAGAUGUU 3176

Qy     2631 AACACCGTTCATGAGATCCAAGGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACG 2690
             |||| |: ||:||  : ||||| || || :     ||:|: :| |: |: ||  :: ||
Db     3177 CACACUGUGCAUGAAGUGCAAGGCGAGACAUACUCUGAUGUUUCACUAGUUAGGUUAACC 3236

Qy     2691 GCAACTCCACTGACTCTGATTTCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGA 2750
             | || ||| :  |  : |:: |         ||| ||:|:: : |:|||  :| | ||
Db     3237 CCUACACCAGUCUCCAUCAUUGCAGGAGACAGCCCACAUGUUUUGGUCGCAUUGUCAAGG 3296

Qy     2751 CACACAAAGAGCTTCAAATATTACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGT 2810
            |||||        :||| :| :|||| |: |:  : ||:||:::||:     |: |::||
Db     3297 CACACCUGUUCGCUCAAGUACUACACUGUUGUUAUGGAUCCUUUAGUUAGUAUCAUUAGA 3356

Qy     2811 GATTTGTCTTCTTTAAGCTCCTTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGA 2870
            ||: :        : |||:| : | : ::||| |:|:|:| ||: || ||||| |    |
Db     3357 GAUCUAGAGAAACUUAGCUCGUACUUGUUAGAUAUGUAUAAGGUCGAUGCAGGAACACAA 3416

Qy     2871 TAGCAATTACAGATGGATGCAGTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAA 2930
            :|||||::|||||: ||  | |:|::||||||:   ||:|: :::|: ||| | || ||
Db     3417 UAGCAAUUACAGAUUGACUCGGUGUUCAAAGGUUCCAAUCUUUUUGUUGCAGCGCCAAAG 3476

Qy     2931 TCAGGAGACTTTCCAGATCTACAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACT 2990
             | || ||  :: | ||: : |||:: :| :| ||:   :| |:||| || || || ||
Db     3477 ACUGGUGAUAUUUCUGAUAUGCAGUUUUACUAUGAUAAGUGUCUCCCAGGCAACAGCACC 3536

Qy     2991 ATACTTAACAAGTATGATGCTGTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAG 3050
            |:  : || || : :||:||:|::||||:||||::   :|| | :    : ||:|: ||
Db     3537 AUGAUGAAUAAUUUUGAUGCUGUUACCAUGAGGUUGACUGACAUUUCAUUGAAUGUCAAA 3596

Qy     3051 GATTGTGTTCTTGATTTTTCCAAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTA 3110
            ||::|  :  : ||: : :| ||   : ::|    ||| |||||    |    |   |:|
Db     3597 GAUUGCAUAUUGGAUAUGUCUAAGUCUGUUCGUGCGCCUAAGGAUCAAAUCAAACCACUA 3656

Qy     3111 GAGCCAGTTTTGCGTACCGCGGCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTG 3170
               ||  :  : || || ||||| |||  |||| |     | ||||:| : |||||: :
Db     3657 AUACCUAUGGUACGAACGGCGGCAGAAAUGCCACGCCAGACUGGACUAUUGGAAAAUUUA 3716

Qy     3171 GTTGCAATGATTAAAAGAAATTTCAACGCACCAGACCTGACGGGGACGATTGACATTGAG 3230
            |: || |:||::|||||||| :: |||||||| ||  :| | || |  |::|| |::||
Db     3717 GUGGCGAUGAUUAAAAGAAACUUUAACGCACCCGAGUUGUCUGGCAUCAUUGAUAUUGAA 3776

Qy     3231 AGCACCGCATCTGTTGTAGTAGATAAGTTTTTTGATAGCTATTTTATTAAAAAAGAAAAA 3290
            |  || |||:|: : |: |:|||:|||::::::||:|| :|:::  ::||| || ||| |
Db     3777 AAUACUGCAUCUUUGGUUGUAGAUAAGUUUUUUGAUAGUUAUUUGCUUAAAGAAAAAAGA 3836

Qy     3291 TACACAAAAAATATTGCTGGAGTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAAC 3350
             |  |||| || | :| :    :| :  | |  || :|  : |  |||:||:: |||||
Db     3837 AAACCAAAUAAAAAUGUUUCUUUGUUCAGUAGAGAGUCUCUCAAUAGAUGGUUAGAAAAG 3896

Qy     3351 AGGAAAGAAGTACTATTGGACGACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATC 3410
              | || | |:|  | : | | |  : ||  | :   |::::   ||: :||| ||  :
Db     3897 CAGGAACAGGUAACAAUAGGCCAGCUCGCAGAUUUUGAUUUUGUGGAUUUGCCAGCAGUU 3956

Qy     3411 GATCAGTACAAGCACATGATCAAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAG 3470
            ||:|||:|||  ||||:||: || || ||||| ||||| || ::||||  ::|||: ||
Db     3957 GAUCAGUACAGACACAUGAUUAAAGCACAACCCAAACAAAAGUUGGACACUUCAAUCCAA 4016

Qy     3471 AATGAATACCCTGCTCTGCAAACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTG 3530
            |  || :|||| ||: :||| || |::|: :||||::| ||  |||:||| |  |: ::
Db     4017 ACGGAGUACCCGGCUUUGCAGACGAUUGUGUACCAUUCAAAAAAGAUCAAUGCAAUAUUC 4076

Qy     3531 GCCGGTTTCT---CAGAGCTTACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTT 3587
            | |   :: :     ||||::|| |||    : |: ||     ::||::| |  |  :::
Db     4077 GGCCCGUUGUUUAGUGAGCUUACUAGGCAAUUACUGGACAGUGUUGAUUCGAGCAGAUUU 4136

Qy     3588 CTTTTCTTTACTAGGAAAACTCCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCG 3647
             : :: :: || || || || ||||  ||||:: | || :: ::|   ||:|:||||
Db     4137 UUGUUUUUCACAAGAAAGACACCAGCGCAGAUUGAGGAUUUCUUCGGAGAUCUCGACAGU 4196

Qy     3648 CACGTTCCTATGGATGTGTTAGAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAG 3707
            || |: || |:|||:|: :: || |:|||:|: :| || :| || || :| ||||| ||
Db     4197 CAUGUGCCGAUGGAUGUCUUGGAGCUGGAUAUAUCAAAAUACGACAAAUCUCAGAAUGAA 4256

Qy     3708 TTTCATTGTGCTGTAGAGTATGAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCC 3767
            :: || :|:|| |:||| :| || |: :||  ||||::|||: :  | || :: ::||
Db     4257 UUCCACUGUGCAGUAGAAUACGAGAUCUGGCGAAGAUUGGGUUUUGAAGACUUCUUGGGA 4316

Qy     3768 GAAGTGTGGAAACAAGGGCACAGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAG 3827
            ||||: :||||||||||||| || || || ||  : |||||::| |  || || |: ||
Db     4317 GAAGUUUGGAAACAAGGGCAUAGAAAGACCACCCUCAAGGAUUAUACCGCAGGUAUAAAA 4376

Qy     3828 ACATGTCTGTGGTATCAAAGGAAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTT 3887
            || :|  : :||:|:||||| || ||||| || |: || || ::||: || || ||:|:
Db     4377 ACUUGCAUCUGGUAUCAAAGAAAGAGCGGGGACGUCACGACGUUCAUUGGAAACACUGUG 4436

Qy     3888 ATAATAGCAGCTTGCTTGGGTTCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTT 3947
            |: |: || || :| ::||  :| |:| : ||||:||| ||  : |: |||||| || :::
Db     4437 AUCAUUGCUGCAUGUUUGGCCUCGAUGCUUCCGAUGGAGAAAAUAAUCAAAGGAGCCUUU 4496

Qy     3948 TGTGGAGACGATTCCGTTTTGTATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCA 4007
            :| || |||||:    :  :|:| :::||||||||::  || :: || ||  : ||
Db     4497 UGCGGUGACGAUAGUCUGCUGUACUUUCCAAAGGGUUGUGAGUUUCCGGAUGUGCAACAC 4556

Qy     4008 TGTGCTAATCTCATGTGGAATTTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTT 4067
            :  || ||:|: |:|:||||::::|| || ||||:|: :| |||   |:| || :||:::
Db     4557 UCCGCGAAUCUUAUGUGGAAUUUUGAAGCAAAACUGUUUAAAAAACAGUAUGGAUACUUU 4616

Qy     4068 TGTGGTAGATACATCATACACCATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAG 4127
            :| || |||:|  : |:||| || || |  |||   |: |:|:|::| ||:||  : |||
Db     4617 UGCGGAAGAUAUGUAAUACAUCACGACAGAGGAUGCAUUGUGUAUUACGAUCCCCUAAAG 4676

Qy     4128 TTGATCTCCAAACTTGGGGCAAAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGG 4187
            ::||:|:| ||||::|| || ||||| |:||||||::  || |||:: || |||:: ||
Db     4677 UUGAUCUCGAAACUUGGUGCUAAACACAUCAAGGAUUGGGAACACUUGGAGGAGUUCAGA 4736

Qy     4188 GTGTCTTTGTGCGATGTTGCTTGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTG 4247
              |:|: : :| ||:|::||:  ::|| :    |||   :|       :   | ||| :|
Db     4737 AGGUCUCUUUGUGAUGUUGCUGUUUCGUU---GAACAAUUGUGCGUAUUACACACAGUUG 4793

Qy     4248 AACGCAGCTATCAAGGAGGTTCATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGT 4307
             |||  ||: :   |||||::||:|| |||||   :   ||::||:::| :: :||  |:
Db     4794 GACGACGCUGUAUGGGAGGUUCAUAAGACCGCCCCUCCAGGUUCGUUUGUUUAUAAAAGU 4853

Qy     4308 GTTAACAAATTTTTGTGTGATAAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAG 4367
```

```
               :    || : :::|: :|:||| :: : :::|||| :::|::: :| |:|||: :
Db       4854 CUGGUGAAGUAUUUGUCUGAUAAAGUUCUUUUUAGAAGUUUGUUUAUAGAUGGCUCUAGU 4913

Qy       4368 TCTCAGAGATACTGTCAAAATTAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACT 4427
              : : | ||  |  |: || |: |  |||:: |: || |: :| |||  |||  |||:  :
Db       4914 UGUUAAAGGAAAAGUGAAUAUCAAUGAGUUUAUCGACCUGUCAAAAAUGGAGAAGAUCUU 4973

Qy       4428 TCCGGCATTCATGACTAAGGTCAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGC 4487
               ||| |  :  : ||    |: |||||:|::|     :| |  |: || || |: |:||
Db       4974 ACCGUCGAUGUUUACCCCUGUAAAGAGUGUUAUGUGUUCCAAAGUUGAUAAAAUAAUGGU 5033

Qy       4488 TGTTAAGAATGATAGTCTTTCTGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAA 4547
              :  :||||:||     : :| || |:  |  : |::|||||::|||   :  :: | |
Db       5034 UCAUGAGAAUGAGUCAUUGUCAGAGGUGAACCUUCUUAAAGGAGUUAAGCUUAUUGAUAG 5093

Qy       4548 AGGGTATGTGTGCTTAGCTGATTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTG 4607
               || :| |: :| ::||| | :::||: |:  | || |||:||||  : || || || :|
Db       5094 UGGAUACGUCUGUUUAGCCGGUUUGGUCGUCACGGGCGAGUGGAACUUGCCUGACAAUUG 5153

Qy       4608 CCGTGGTGGTGTCAGTGTTTGTATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAAC 4667
              | | || ||:|: || |: :|: : |: || || || |:| ||||     | || || ||
Db       5154 CAGAGGAGGUGUGAGCGUGUGUCUGGUGGACAAAAGGAUGGAAAGAGCCGACGAGGCCAC 5213

Qy       4668 GCTGGGTGCGTATCACGCCCCTGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAA 4727
               |: ||  | :|  || |  | ||:   || || |  :::   :: ||| :  : || ||
Db       5214 UCUCGGAUCUUACUACACAGCAGCUGCAAAGAAAAGAUUUCAGUUCAAGGUCGUUCCCAA 5273

Qy       4728 TTATTCAATAACATCCGAGGATGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAA 4787
              ::|: | |:|||  || |||| ||   |||  ||   :||||||: ::||: ||:|: |
Db       5274 UUAUGCUAUAACCACCCAGGACGCGAUGAAAAACGUCUGGCAAGUUUUAGUUAAUAUUAG 5333

Qy       4788 AGGAGTGGCTATGGAAGAAGGATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGT 4847
              |   |:|   |:|  ||  || : |:|:||  : :|: :||||:: |: :|  : :|: :
Db       5334 AAAUGUGAAGAUGUCAGCGGGUUUCUGUCCGCUUUCUCUGGAGUUUGUGUCGGUGUGUAU 5393

Qy       4848 AGTACATAAAAATAATGTAAGAAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGG 4907
               |:  |:| |||:||: :|| |  |||:::||| ||    |::   |  |:|| ||||||
Db       5394 UGUUUAUAGAAAUAAUAUAAAAUUAGGUUUGAGAGAGAAGAUUACAAACGUGAGAGACGG 5453

Qy       4908 CTCGCCAATTGAACTCACTGAAAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGC 4967
                 ||| |: ||||: || ||| | |: |::|| ||:: | :||| || |: || |:| |
Db       5454 AGGGCCCAUGGAACUUACAGAAGAAGUCGUUGAUGAGUUCAUGGAAGAUGUCCCUAUGUC 5513

Qy       4968 TGTGA 4972
                : |
Db       5514 GAUCA 5518

RESULT 2
US-09-037-751-1
; Sequence 1, Application US/09037751
; Patent No. 6037456
;  GENERAL INFORMATION:
;    APPLICANT:  GARGER, STEPHEN
;    APPLICANT:  HOLTZ, R. BARRY
;    APPLICANT:  McCULLOCH, MICHAEL
;    APPLICANT:  TURPEN, THOMAS
;    TITLE OF INVENTION:  A PROCESS FOR ISOLATING AND
;    TITLE OF INVENTION:  PURIFYING VIRUSES SOLUBLE PROTEINS AND PEPTIDES
;    TITLE OF INVENTION:  FROM PLANT SOURCES
;    NUMBER OF SEQUENCES:  5
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  Howrey & Simon
;      STREET:  1299 Pennsylvania Avenue N.W.
;      CITY:  Washington
;      STATE:  DC
;      COUNTRY:  USA
;      ZIP:  20004
;    COMPUTER READABLE FORM:
;      MEDIUM TYPE:  Diskette
;      COMPUTER:  IBM Compatible
;      OPERATING SYSTEM:  DOS
;      SOFTWARE:  FastSEQ for Windows Version 2.0
;    CURRENT APPLICATION DATA:
;      APPLICATION NUMBER:  US/09/037,751
;      FILING DATE:  10-MAR-1998
;      CLASSIFICATION:
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:
;      FILING DATE:
;    ATTORNEY/AGENT INFORMATION:
;      NAME:  Halluin, Albert P
;      REGISTRATION NUMBER:  25,277
;      REFERENCE/DOCKET NUMBER:  00801.0140.999
;    TELECOMMUNICATION INFORMATION:
;      TELEPHONE:  650-463-8109
;      TELEFAX:  650-463-8400
;      TELEX:
;  INFORMATION FOR SEQ ID NO:  1:
;    SEQUENCE CHARACTERISTICS:
;      LENGTH:  6395 base pairs
;      TYPE:  nucleic acid
;      STRANDEDNESS:  single
;      TOPOLOGY:  unknown
;    MOLECULE TYPE:  Genomic RNA
US-09-037-751-1

  Query Match             40.9%;  Score 2034.2;  DB 3;  Length 6395;
  Best Local Similarity   44.4%;  Pred. No. 0;
  Matches 2214;  Conservative  957;  Mismatches 1793;  Indels   21;  Gaps    4;

Qy          6 AAGGTAATTCCTGAGTTTCAAAGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAA 65
              ||   | : ||  | :: |||| ||| || ::: |||| :| ||||||  :||  | ||
Db        537 AAAACAGUCCCCAACUUCCAAAAGGAAGCAUUUGACAGAUACGCAGAAAUUCCUGAAGAC 596

Qy         66 GTCTGCTGCTCTAAAACTTTTCAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGA 125
              |    |:|    || ||::: |||      |||   || |||    || |    || |||
Db        597 GCUGUCUGUCACAAUACUUUCCAGACAAUGCGACAUCAGCCGAUGCAGCAAUCAGGCAGA 656

Qy        126 AGATACGCTGTTGCTCTGCACAGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCG 185
                 :| ||  ::|| |: |||||  : :|:|| |: || |   |:|||:: || || ||
Db        657 GUGUAUGCCAUUGCGCUACACAGCAUAUAUGACAUACCAGCCGAUGAGUUCGGGGCGGCA 716

Qy        186 TTAATATCTAAGAATATACATGTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTA 245
               :  :    || ||: : ||:   :| :|:|| |::  |   ::  | ||     :  :
Db        717 CUCUUGAGGAAAAAUGUCCAUACGUGCUAUGCCGCUUUCCACUUCUCCGAGAACCUGCUU 776

Qy        246 CTAGACCAGACGGAGGTTACGCTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGAT 305
              |: ||  |  |  | |: |   :  | ||||:   |||   :::     | || || ||
Db        777 CUUGAAGAUUCAUACGUCAAUUUGGACGAAAUCAACGCGUGUUUUUCGCGCGAUGGAGAC 836

Qy        306 GATGTTTCTTTTTCTTTGCTGATGAAAGTACTTTAAATTATAGTCATAAATACAAAAAT 365
               |  :  | ::::  :::||    || ||:||: : ||::|: |:||:|  :|    ||:
Db        837 AAGUUGACCUUUUCUUUUGCAUCAGAGAGUACUCUUAAUUAUUGUCAUAGUUAUUCUAAU 896

Qy        366 ATCTTGCATTATGTAGTTAAATCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAG 425
              |:  :  | :|:|:    ||| |::||:: || || :|:| :|||   |:::|| : |||
Db        897 AUUCUUAAGUAUGUGUGCAAAACUUACUUCCCGGCCUCUAAUAGAGAGGUUUACAUGAAG 956

Qy        426 GAATTTTTAGTCACTAGGGTTAATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTAT 485
              || :::::||:||| || |::||:|| :||::::|:|| ::: | | | :|||:|| : :
Db        957 GAGUUUUUAGUCACCAGAGUUAAUACCUGGUUUUGUAAGUUUUCUAGAAUAGAUACUUUU 1016

Qy        486 ATTCTGTACAAGAGTGTTAGACAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATG 545
               :: :|:||||  |:|:    ||   | |    ||:||:|| |||:: :|:   || |:|
Db       1017 CUUUUGUACAAAGGUGUGGCCCAUAAAAGUGUAGAUAGUGAGCAGUUUUAUACUGCAAUG 1076

Qy        546 GAAGACGCCTTTGCTTACAAGAAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTT 605
              |||||||| :    ::|||| || ||  : || |:|: |||||  || |||    :| ::
Db       1077 GAAGACGCAUGGCAUUACAAAAAGACUCUUGCAAUGUGCAACAGCGAGAGAAUCCUCCUU 1136

Qy        606 AGAGACACGGCTTCGGTTAACTTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCG 665
                 ||  |  | :| |: || :  :||:: || || |:|| ||| |:||: |: |:|||
Db       1137 GAGGAUUCAUCAUCAGUCAAUUACUGGUUUCCCAAAAUGAGGGAUAUGGUCAUCGUACCA 1196

Qy        666 CTGTTTGAGGGTTCTATTACCAGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGT 725
```

```
                 : :: ||   ::|: :    |  |  |||| |||  | |  || |:| : |:
Db        1197 UUAUUCGACAUUUCUUUGGAGACUAGUAAGAGGACGCGCAAGGAAGUCUUAGUGUCCAAG 1256

Qy         726 GACTTCGTTTACACAGTGCTTAATCATATCAGAACATATCAAGCCAAAGCGTTAACTTAC 785
               || ::||: :  ||||:||::|| || |:  |||||:| || || |||||  : || :||
Db        1257 GAUUUCGUGUUUACAGUGCUUAACCACAUUCGAACAUACCAGGCGAAAGCUCUUACAUAC 1316

Qy         786 CAGAACGTATTATCTTTCGTGGAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACT 845
                  || |: :: :|  : |: || :| |:  ||:|  | |: |: |: || ||:|: ||
Db        1317 GCAAAUGUUUUGUCCCUUGUCGAAUCGAUUCGAUCGAGGGUAAUCAUUAACGGUGUGACA 1376

Qy         846 GCTAGGTCTGAATGGGATGTAGATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTC 905
               || |||:| |||:||||:|: || ||| |  :  : ||| ||::|:| |:||| :: : |
Db        1377 GCGAGGUCCGAAUGGGAUGUGGACAAAUCUUUGUUACAAUCCUUGUCCAUGACGUUUUAC 1436

Qy         906 TTGCAGACTAAGCTGGCTGCGCTTCAAGACGATATAGTAATGGGAAAGTTTCGGTGCTTG 965
                :||| ||:||||: || |  |:  | || ||  :| : |:  | |||::: |   |
Db        1437 CUGCAUACUAAGCUUGCCGUUCUAAAGGAUGACUUACUGAUUAGCAAGUUUAGUCUCGGU 1496

Qy         966 GATAAGACCACTTCTGAACTTATTTGGGATGAGGTGGGCAAATTTTTTGGAAACGTTTTC 1025
                  || ||    :   | | : : :||||:||| :          :::|| ||||  ::
Db        1497 UCGAAAACGGUGUGCCAGCAUGUGUGGGAUGAGAUUUCGCUGGCGUUUGGGAACGCAUUU 1556

Qy        1026 CCCACTATCAAAGAGAGATTGGTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTG 1085
               ||| |  : ||||||||| :  :|| ||||||| :: :    |:    |   | ||  :
Db        1557 CCCUCCGUGAAAGAGAGACUCUUGAACAGGAAACUUAUCAGAGUGGCAGGCGACGCAUUA 1616

Qy        1086 AAGATCAAGATCCCAGATCTGTATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACC 1145
                |||:|| | : || ||:|: :|:|: || :   ||||| :: |: ||:|| :|||
Db        1617 GAGAUCAGGGUGCCUGAUCUAUAUGUGACCUUCCACGACAGAUUAGUGACUGAGUACAAG 1676

Qy        1146 AAGTCTGAGGAGTTACCGCATCTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATG 1205
                  :|:| |||  : ||    |: || |: | |||| |  : |||||| | ||     |:|
Db        1677 GCCUCUGUGGACAUGCCUGCGCUUGACAUUAGGAAGAAGAUGGAAGAAACGGAAGUGAUG 1736

Qy        1206 TACGACGCGTTATCAGAATTATCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAG 1265
               :|| | ||  : :|||| ::|:|  :  : | ||   |:|| || ::|||: : |
Db        1737 UACAAUGCACUUUCAGAGUUAUCGGUGUUAAGGGAGUCUGACAAAUUCGAUGUUGAUGUU 1796

Qy        1266 TTCAAAGACATGTGCAAGGCTTTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTT 1325
               ::     | |:|:|| |  |::: || |::   ||      ||||||    |: |: |:
Db        1797 UUUUCCCAGAUGUGCCAAUCUUUGGAAGUUGACCCAAUGACGGCAGCGAAGGUUAUAGUC 1856

Qy        1326 GCAGTGGCCGAGAATAGAAGCGGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAAT 1385
               || |:       ||:   |||||: : ||:|: || :::||    || || |||| |||:
Db        1857 GCGGUCAUGAGCAAUGAGAGCGGUCUGACUCUCACAUUUGAACGACCUACUGAGGCGAAU 1916

Qy        1386 GTGGCTAAGGCTCT------TAAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCG 1439
               |: ||    ||: :      : ||   | ||| :| || |  |   :     ::    |
Db        1917 GUUGCGCUAGCUUUACAGGAUCAAGAGAAGGCUUCAGAAGGUGCAUUGGUAGUUACCUCA 1976

Qy        1440 ACATCCGAAGAGGTGAACGTAAATAAATTTTCTATTGCTGAGAAAGGGAGATTGCCTGTG 1499
               | |   |  || |        |  ||   ::| |: ||      || |  |      |
Db        1977 AGAGAAGUUGAAGAACCGUCCAUGAAGGGUUCGAUGGCCAGAGGAGAGUUACAAUUAGCU 2036

Qy        1500 TGTGCAGAAAGTCATGGTTTGACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTC 1559
                |:   |   |  |:  :  |  |    |  | :   || || ||||| : |||:|  :
Db        2037 GGUCUUGCUGGAGAUCAUCCGGAGUCGUCCUAUUCUAAGAACGAGGAGAUAGAGUCUUUA 2096

Qy        1560 AACGATTTCCATAAGGCTTGCGTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTC 1619
                |  | :: ||:| |||    |  ||:    : |::   ||||| |:|   :|| ::|:
Db        2097 GAGCAGUUUCAUAUGGCGACGGCAGAUUCGUUAAUUCGUAAGCAGAUGAGCUCGAUUGUG 2156

Qy        1620 TACACTGGCTCACTCAAAGTTCAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCG 1679
               :|||| ||  |  : ||||::|| ||||:||| |||: : : || ||  :|| ||| :|
Db        2157 UACACGGGUCCGAUUAAAGUUCAGCAAAUGAAAAACUUUAUCGAUAGCCUGGUAGCAUCA 2216

Qy        1680 TTGTCCGCCACTGTATCAAATCTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCT 1739
                : :| ||  | |: :| ||:|:   ||||   |: || ||:  ||  |    :||   :
Db        2217 CUAUCUGCUGCGGUGUCGAAUCUCGUCAAGAUCCUCAAAGAUACAGCUGCUAUUGACCUU 2276

Qy        1740 GATTCCAGGGAGAAAGTTGGTGTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCT 1799
               ||  || |  | ||  ::|| |: : |||:|:  | :  |  |||:|| :  :||||||
Db        2277 GAAACCCGUCAAAAGUUUGGAGUCUUGGAUGUUGCAUCUAGGAAGUGGUUAAUCAAACCA 2336

Qy        1800 GCGGCCAAAGGTCATTCATGGGGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCA 1859
                |||||||  |:||: ||:|||| |::|:        ||  | ||||      :   ||
Db        2337 ACGGCCAAGAGUCAUGCAUGGGGUGUUGUUGAAACCCACGCGAGGAAGUAUCAUGUGGCG 2396

Qy        1860 CTTCTATCTTATGAAGGAGATAGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTA 1919
               |:: :    :|:|| |   |  |  :||:|||     | || :|||| || |: ||:|:
Db        2397 CUUUUGGAAUAUGAUGAGCAGGGUGUGGUGACAUGCGAUGAUUGGAGAAGAGUAGCUGUU 2456

Qy        1920 TCATCTGATACAATGGTATATTCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATG 1979
                  :|:||  |  : |: :|::| || |: || || |:|  || :|:| | | |    :
Db        2457 AGCUCUGAGUCUGUUGUUUAUUCCGACAUGGCGAAACUCAGAACUCUGCGCAGACUGCUU 2516

Qy        1980 AGAGACGGTGAACCCCACGAACCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGT 2039
                || |||| ||||| || |    :|   ||||| : |: |::|:||| || |: || ||
Db        2517 CGAAACGGAGAACCGCAUGUCAGUAGCGCAAAGGUUGUUCUUGUGGACGGAGUUCCGGGC 2576

Qy        2040 TGTGGAAAGTACAAAGGAGATTTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTT 2099
               :|:|||||   ||||| |  : ::   ||  :: |: ::||:|| ||: : |: :: |:
Db        2577 UGUGGAAAAACCAAAGAAAUUCUUUCCAGGGUUAAUUUUGAUGAAGAUCUAAUUUUAGUA 2636

Qy        2100 CCTGGAAAACAAGCTGCTGCTATGATCAGAAGAAGGGCTAATTCATCTGGACTGATAAGA 2159
               ||:|| || ||||| || |  |:||:|||||||| | || ||::| :| ||  : |:
Db        2637 CCUGGGAAGCAAGCCGCGGAAAUGAUCAGAAGACGUGCGAAUUCCUCAGGGAUUAUUGUG 2696

Qy        2160 GCCACAATGGACAATGTGAGAACGGTAGATTCACTTCTAATGCAT---------CCAAAA 2210
               ||||| | ||||||| |: | ||| |: ||::|  :  : |:| |:            | |
Db        2697 GCCACGAAGGACAACGUUAAAACCGUUGAUUCUUUCAUGAUGAAUUUUGGGAAAAGCACA 2756

Qy        2211 CCGCGATCACACAAGAGGCTTTTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTT 2270
               |   |      ||||||| : :: |::||:||||||::||:| :||| || ||::|:|::
Db        2757 CGCUGUCAGUUCAAGAGGUUAUUCAUUGAUGAAGGGUUGAUGUUGCAUACUGGUUGUGUU 2816

Qy        2271 AACTTCCTGGTGCTTATCTCTGGTTGCGACATCGCATACATTTACGGAGATACACAGCAG 2330
               || :: |: |:|   |: :|    :|||| |: |||:|  :::||||||| |||||||||
Db        2817 AAUUUUCUUGUGGCGAUGUCAUUGUGCGAAAUUGCAUAUGUUUACGGAGACACACAGCAG 2876

Qy        2331 ATTCCTTTCATTAACAGAGTTCAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAA 2390
               |::|| : ||: || ||||::      ::||||:| |||   ||::::|  ||  :| ||
Db        2877 AUUCCAUACAUCAAUAGAGUUUCAGGAUUCCCGUACCCCGCCCAUUUUGCCAAAUUGGAA 2936

Qy        2391 GTGGATGAAGTTGAGATGAGGAGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTC 2450
               |: || || |: ||||   | || || || |:  | :| ||||  ||:|: |    ::
Db        2937 GUUGACGAGGUGGAGACACGCAGAACUACUCUCCGUUGUCCAGCCGAUGUCACACAUUAU 2996

Qy        2451 CTACAATCGAAGTACGAAGGAGCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCA 2510
               |:  |   ||  :| || ||    |: |  | |||::|  | |:  ||   :| |: :|
Db        2997 CUGAACAGGAGAUAUGAGGGCUUUGUCAUGAGCACUUCUUCGGUUAAAAAGUCUGUUUCG 3056

Qy        2511 TCTGAGATGATAGGCGGTAAGGGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGGAAA 2570
                  ||||:| : |||||    |  |:  : ||     : :| |||||  :  | || ||
Db        3057 CAGGAGAUGGUCGGCGGAGCCGCCGUGAUCAAUCCGAUCUCAAAACCCUUGCAUGGCAAG 3116

Qy        2571 ATTGTAACTTTCACTCAGGCTGATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTG 2630
               |:  : ||::: || ||  | ||:|||   |   :       |  || :|:    |:|:
Db        3117 AUCCUGACUUUUACCCAAUCGGAUAAAGAAGCUCUGCUUUCAAGAGGGUAUUCAGAUGUU 3176

Qy        2631 AACACCGTTCATGAGATCCAAGGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACG 2690
                |||| |: ||:||  : ||||| || || :     ||:|: :| |: |: || :: ||
Db        3177 CACACUGUGCAUGAAGUGCAAGGCGAGACAUACUCUGAUGUUUCACUAGUUAGGUUAACC 3236

Qy        2691 GCAACTCCACTGACTCTGATTTCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGA 2750
                | || ||| :  |  : |:: |         ||| ||:|:: : |:|||  :| | ||
Db        3237 CCUACACCAGUCUCCAUCAUUGCAGGAGACAGCCCACAUGUUUUGGUCGCAUUGUCAAGG 3296

Qy        2751 CACACAAAGAGCTTCAAATATTACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGT 2810
               |||||        :||| :| :|||| |: |:  : ||:||:::||:    |: |::||
Db        3297 CACACCUGUUCGCUCAAGUACUACACUGUUGUUAUGGAUCCUUUAGUUAGUAUCAUUAGA 3356

Qy        2811 GATTTGTCTTCTTTAAGCTCCTTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGA 2870
               ||: :        : |||:| : | : ::||| |:|:|:| ||: || ||||| |    |
Db        3357 GAUCUAGAGAAACUUAGCUCGUACUUGUUAGAUAUGUAUAAGGUCGAUGCAGGAACACAA 3416
```

```
Qy       2871 TAGCAATTACAGATGGATGCAGTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAA 2930
              :|||||::|||||: ||  | |:|::||||||:   ||:|: :::|: ||| | || ||
Db       3417 UAGCAAUUACAGAUUGACUCGGUGUUCAAAGGUUCCAAUCUUUUUGUUGCAGCGCCAAAG 3476

Qy       2931 TCAGGAGACTTTCCAGATCTACAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACT 2990
               | || ||  :: | ||: : |||:: :| :| ||:   :| |:||| || |  || ||
Db       3477 ACUGGUGAUAUUUCUGAUAUGCAGUUUUACUAUGAUAAGUGUCUCCCAGGCAACAGCACC 3536

Qy       2991 ATACTTAACAAGTATGATGCTGTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAG 3050
              |:  : || || : :||:||:|::||||:||||::   :|| | :    : ||:|: ||
Db       3537 AUGAUGAAUAAUUUUGAUGCUGUUACCAUGAGGUUGACUGACAUUUCAUUGAAUGUCAAA 3596

Qy       3051 GATTGTGTTCTTGATTTTTCCAAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTA 3110
              ||::|  :  : ||: : :| ||   : ::|    ||| |||||    |    |   |:|
Db       3597 GAUUGCAUAUUGGAUAUGUCUAAGUCUGUUCGUGCGCCUAAGGAUCAAAUCAAACCACUA 3656

Qy       3111 GAGCCAGTTTTGCGTACCGCGGCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTG 3170
                 ||  :  : || || ||||| |||  |||| |     | ||||:| : |||||: :
Db       3657 AUACCUAUGGUACGAACGGCGGCAGAAAUGCCACGCCAGACUGGACUAUUGGAAAAUUUA 3716

Qy       3171 GTTGCAATGATTAAAAGAAATTTCAACGCACCAGACCTGACGGGGACGATTGACATTGAG 3230
              |: || |:||::|||||||| :: ||||||||| ||  :| | || |  |::|| |::||
Db       3717 GUGGCGAUGAUUAAAAGAAACUUUAACGCACCCGAGUUGUCUGGCAUCAUUGAUAUUGAA 3776

Qy       3231 AGCACCGCATCTGTTGTAGTAGATAAGTTTTTTGATAGCTATTTTATTAAAAAAGAAAAA 3290
              |  || |||:|: : |: |:|||:|||::::::||:|| :|:::  ::||| || ||| |
Db       3777 AAUACUGCAUCUUUGGUUGUAGAUAAGUUUUUUGAUAGUUAUUUGCUUAAAGAAAAAAGA 3836

Qy       3291 TACACAAAAAATATTGCTGGAGTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAAC 3350
               |  |||| || | :| :    :| :  | |  || :|  : |  |||:||:: |||||
Db       3837 AAACCAAAUAAAAAUGUUUCUUUGUUCAGUAGAGAGUCUCUCAAUAGAUGGUUAGAAAAG 3896

Qy       3351 AGGAAAGAAGTACTATTGGACGACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATC 3410
                | || | |:|  | : | | |  : ||  | :   |::::   ||: :||| ||  :
Db       3897 CAGGAACAGGUAACAAUAGGCCAGCUCGCAGAUUUUGAUUUUGUGGAUUUGCCAGCAGUU 3956

Qy       3411 GATCAGTACAAGCACATGATCAAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAG 3470
              ||:|||:|||  ||||:||: || || ||||| ||||| || ::||||  ::|||: ||
Db       3957 GAUCAGUACAGACACAUGAUUAAAGCACAACCCAAACAAAAGUUGGACACUUCAAUCCAA 4016

Qy       3471 AATGAATACCCTGCTCTGCAAACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTG 3530
              |  || :|||| ||: :||| || |::|: :||||::| ||  |||:||| |  |: ::
Db       4017 ACGGAGUACCCGGCUUUGCAGACGAUUGUGUACCAUUCAAAAAAGAUCAAUGCAAUAUUC 4076

Qy       3531 GCCGGTTTCT---CAGAGCTTACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTT 3587
              | |   :: :     ||||::|| |||    : |: ||     ::||::| |  |  :::
Db       4077 GGCCCGUUGUUUAGUGAGCUUACUAGGCAAUUACUGGACAGUGUUGAUUCGAGCAGAUUU 4136

Qy       3588 CTTTTCTTTACTAGGAAAACTCCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCG 3647
               : :: :: || || || || ||||  ||||:: | || :: ::|   ||:|:||||
Db       4137 UUGUUUUUCACAAGAAAGACACCAGCGCAGAUUGAGGAUUUCUUCGGAGAUCUCGACAGU 4196

Qy       3648 CACGTTCCTATGGATGTGTTAGAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAG 3707
              || |: || |:|||:|  :: || |:|||:|: :| || :| || || :| ||||| ||
Db       4197 CAUGUGCCGAUGGAUGUCUUGGAGCUGGAUAUAUCAAAAUACGACAAAUCUCAGAAUGAA 4256

Qy       3708 TTTCATTGTGCTGTAGAGTATGAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCC 3767
              :: || :|:|| |:||| :| || |: :||  ||||::|||: :  | || :: ::||
Db       4257 UUCCACUGUGCAGUAGAAUACGAGAUCUGGCGAAGAUUGGGUUUUGAAGACUUCUUGGGA 4316

Qy       3768 GAAGTGTGGAAACAAGGGCACAGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAG 3827
              ||||: :|||||||||||| || || || ||  : |||||::| |  || || |: ||
Db       4317 GAAGUUUGGAAACAAGGGCAUAGAAAGACCACCCUCAAGGAUUAUACCGCAGGUAUAAAA 4376

Qy       3828 ACATGTCTGTGGTATCAAAGGAAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTT 3887
              || :|  : :||:|:||||| || ||||| || |: || || ::||: || || ||:|:
Db       4377 ACUUGCAUCUGGUAUCAAAGAAAGAGCGGGGACGUCACGACGUUCAUUGGAAACACUGUG 4436

Qy       3888 ATAATAGCAGCTTGCTTGGGTTCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTT 3947
              |: |: || || :| ::||  :| |:| : ||||:||| ||  : |: |||||| || :::
Db       4437 AUCAUUGCUGCAUGUUUGGCCUCGAUGCUUCCGAUGGAGAAAAUAAUCAAAGGAGCCUUU 4496

Qy       3948 TGTGGAGACGATTCCGTTTTGTATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCA 4007
              :| || |||||:    :  :|:| :::||||||||::  || ::||  ||  : ||
Db       4497 UGCGGUGACGAUAGUCUGCUGUACUUUCCAAAGGGUUGUGAGUUUCCGGAUGUGCAACAC 4556

Qy       4008 TGTGCTAATCTCATGTGGAATTTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTT 4067
              :  || ||:|: |:|:||||::::|| || ||||:|: :| |||   |:| || :||:::
Db       4557 UCCGCGAAUCUUAUGUGGAAUUUUGAAGCAAAACUGUUUAAAAAACAGUAUGGAUACUUU 4616

Qy       4068 TGTGGTAGATACATCATACACCATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAG 4127
              :| || |||:|  : |:||| || || |  |||   |: |:|:|::| ||:||  : |||
Db       4617 UGCGGAAGAUAUGUAAUACAUCACGACAGAGGAUGCAUUGUGUAUUACGAUCCCCUAAAG 4676

Qy       4128 TTGATCTCCAAACTTGGGGCAAAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGG 4187
              ::||:|:| ||||::|| || ||||| |:||||||::  || |||:: || |||:: ||
Db       4677 UUGAUCUCGAAACUUGGUGCUAAACACAUCAAGGAUUGGGAACACUUGGAGGAGUUCAGA 4736

Qy       4188 GTGTCTTTGTGCGATGTTGCTTGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTG 4247
                |:|: : :| ||:|::||:  ::|| :    |||   :|       :   | ||| :|
Db       4737 AGGUCUCUUUGUGAUGUUGCUGUUUCGUU---GAACAAUUGUGCGUAUUACACACAGUUG 4793

Qy       4248 AACGCAGCTATCAAGGAGGTTCATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGT 4307
               |||  ||: :   |||||::||:|| |||||   :   ||::||:::| :: :||  |:
Db       4794 GACGACGCUGUAUGGGAGGUUCAUAAGACCGCCCCUCCAGGUUCGUUUGUUUAUAAAAGU 4853

Qy       4308 GTTAACAAATTTTTGTGTGATAAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAG 4367
               :    || : :::|: :||:||| :: : :::|||| :::|::: :| |:|||: :
Db       4854 CUGGUGAAGUAUUUGUCUGAUAAAGUUCUUUUUAGAAGUUUGUUUAUAGAUGGCUCUAGU 4913

Qy       4368 TCTCAGAGATACTGTCAAAATTAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACT 4427
              : : | ||  |  |: || |: |  |||:: |: || |: :| |||  |||  |||:  :
Db       4914 UGUUAAAGGAAAAGUGAAUAUCAAUGAGUUUAUCGACCUGUCAAAAAUGGAGAAGAUCUU 4973

Qy       4428 TCCGGCATTCATGACTAAGGTCAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGC 4487
               ||| |  :  : ||    |: |||||:|::|     :| |  |: || || |: |:||
Db       4974 ACCGUCGAUGUUUACCCCUGUAAAGAGUGUUAUGUGUUCCAAAGUUGAUAAAAUAAUGGU 5033

Qy       4488 TGTTAAGAATGATAGTCTTTCTGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAA 4547
              :  : ||||:||     : :| || |:  |  : |::||||| |::||| :  :: | |
Db       5034 UCAUGAGAAUGAGUCAUUGUCAGAGGUGAACCUUCUUAAAGGAGUUAAGCUUAUUGAUAG 5093

Qy       4548 AGGGTATGTGTGCTTAGCTGATTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTG 4607
               || :| |: :| ::||| | :::||: |:  | || |||:||| :  ||| || || :|
Db       5094 UGGAUACGUCUGUUUAGCCGGUUUGGUCGUCACGGGCGAGUGGAACUUGCCUGACAAUUG 5153

Qy       4608 CCGTGGTGGTGTCAGTGTTTGTATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAAC 4667
              | | || ||:|: || |: :|: : |: || || || |:| ||||     | || || ||
Db       5154 CAGAGGAGGUGUGAGCGUGUGUCUGGUGGACAAAAGGAUGGAAAGAGCCGACGAGGCCAC 5213

Qy       4668 GCTGGGTGCGTATCACGCCCCTGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAA 4727
               |: ||  | :|  || |  | ||:   || || |  :::   :: ||| :  : || ||
Db       5214 UCUCGGAUCUUACUACACAGCAGCUGCAAAGAAAAGAUUUCAGUUCAAGGUCGUUCCCAA 5273

Qy       4728 TTATTCAATAACATCCGAGGATGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAA 4787
              ::|: | |:|||  || ||||| ||   |||  ||   :||||||: ::||: ||:|: |
Db       5274 UUAUGCUAUAACCACCCAGGACGCGAUGAAAAACGUCUGGCAAGUUUUAGUUAAUAUUAG 5333

Qy       4788 AGGAGTGGCTATGGAAGAAGGATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGT 4847
              |   |:|   |:|  ||  || : |:|:||  : :|: :||||:: |: :|  : :|: :
Db       5334 AAAUGUGAAGAUGUCAGCGGGUUUCUGUCCGCUUUCUCUGGAGUUUGUGUCGGUGUGUAU 5393

Qy       4848 AGTACATAAAAATAATGTAAGAAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGG 4907
               |:  |:| |||:||: :|| |  |||:::||| ||    |::   |  |:|| ||||||
Db       5394 UGUUUAUAGAAAUAAUAUAAAAUUAGGUUUGAGAGAGAAGAUUACAAACGUGAGAGACGG 5453

Qy       4908 CTCGCCAATTGAACTCACTGAAAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGC 4967
                 ||| |: ||||: || ||| | |: |::|| |||::| :||| || |: || |:| |
Db       5454 AGGGCCCAUGGAACUUACAGAAGAAGUCGUUGAUGAGUUCAUGGAAGAUGUCCCUAUGUC 5513

Qy       4968 TGTGA 4972
                : |
Db       5514 GAUCA 5518
```

```
RESULT 3
US-09-466-422-1
; Sequence 1, Application US/09466422
; Patent No. 6303779
;  GENERAL INFORMATION:
;       APPLICANT: GARGER, STEPHEN
;                  HOLTZ, R. BARRY
;                  McCULLOCH, MICHAEL
;                  TURPEN, THOMAS
;       TITLE OF INVENTION: A PROCESS FOR ISOLATING AND
;                           PURIFYING VIRUSES SOLUBLE PROTEINS AND PEPTIDES
;                           FROM PLANT SOURCES
;       NUMBER OF SEQUENCES: 5
;       CORRESPONDENCE ADDRESS:
;            ADDRESSEE: Howrey & Simon
;            STREET: 1299 Pennsylvania Avenue N.W.
;            CITY: Washington
;            STATE: DC
;            COUNTRY: USA
;            ZIP: 20004
;       COMPUTER READABLE FORM:
;            MEDIUM TYPE: Diskette
;            COMPUTER: IBM Compatible
;            OPERATING SYSTEM: DOS
;            SOFTWARE: FastSEQ for Windows Version 2.0
;       CURRENT APPLICATION DATA:
;            APPLICATION NUMBER: US/09/466,422
;            FILING DATE: 17-Dec-1999
;            CLASSIFICATION: <Unknown>
;       PRIOR APPLICATION DATA:
;            APPLICATION NUMBER: 09/037,751
;            FILING DATE: <Unknown>
;       ATTORNEY/AGENT INFORMATION:
;            NAME: Halluin, Albert P
;            REGISTRATION NUMBER: 25,277
;            REFERENCE/DOCKET NUMBER: 00801.0140.999
;       TELECOMMUNICATION INFORMATION:
;            TELEPHONE: 650-463-8109
;            TELEFAX: 650-463-8400
;            TELEX: <Unknown>
;  INFORMATION FOR SEQ ID NO: 1:
;       SEQUENCE CHARACTERISTICS:
;            LENGTH: 6395 base pairs
;            TYPE: nucleic acid
;            STRANDEDNESS: single
;            TOPOLOGY: unknown
;       MOLECULE TYPE: Genomic RNA
;       SEQUENCE DESCRIPTION: SEQ ID NO: 1:
US-09-466-422-1

  Query Match             40.9%;  Score 2034.2;  DB 3;  Length 6395;
  Best Local Similarity   44.4%;  Pred. No. 0;
  Matches 2214;  Conservative  957;  Mismatches 1793;  Indels   21;  Gaps    4;

Qy           6 AAGGTAATTCCTGAGTTTCAAAGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAA 65
               ||   | : ||  | :: |||| ||| || ::: |||| :| ||||||  :||  | ||
Db         537 AAAACAGUCCCCAACUUCCAAAAGGAAGCAUUUGACAGAUACGCAGAAAUUCCUGAAGAC 596

Qy          66 GTCTGCTGCTCTAAAACTTTTCAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGA 125
               |    |:|    || ||::: |||      |||   || |||    || |    || |||
Db         597 GCUGUCUGUCACAAUACUUUCCAGACAAUGCGACAUCAGCCGAUGCAGCAAUCAGGCAGA 656

Qy         126 AGATACGCTGTTGCTCTGCACAGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCG 185
                  :| ||  ::|| |: ||||||  : :|:|| |: || |   |:|||:: || || ||
Db         657 GUGUAUGCCAUUGCGCUACACAGCAUAUAUGACAUACCAGCCGAUGAGUUCGGGGCGGCA 716

Qy         186 TTAATATCTAAGAATATACATGTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTA 245
                :  :    || ||: : ||:   :| :|:|| ||:: |   ::  | ||     :  :
Db         717 CUCUUGAGGAAAAAUGUCCAUACGUGCUAUGCCGCUUUCCACUUCUCCGAGAACCUGCUU 776

Qy         246 CTAGACCAGACGGAGGTTACGCTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGAT 305
               |: ||  |  |  | |: |   :  | ||||:   |||   :::     | || || ||
Db         777 CUUGAAGAUUCAUACGUCAAUUUGGACGAAAUCAACGCGUGUUUUUCGCGCGAUGGAGAC 836

Qy         306 GATGTTTCTTTTTTCTTTGCTGATGAAAGTACTTTAAATTATAGTCATAAATACAAAAAT 365
                |  :  | ::::  :::||    || ||:||: : ||::|: |:||:|  :|    ||:
Db         837 AAGUUGACCUUUUCUUUUGCAUCAGAGAGUACUCUUAAUUAUUGUCAUAGUUAUUCUAAU 896

Qy         366 ATCTTGCATTATGTAGTTAAATCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAG 425
               |:  :  | :|:|:    ||| |::||:: || || :|:| :|||   |:::|| : |||
Db         897 AUUCUUAAGUAUGUGUGCAAAACUUACUUCCCGGCCUCUAAUAGAGAGGUUUACAUGAAG 956

Qy         426 GAATTTTTAGTCACTAGGGTTAATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTAT 485
               || :::::||:||| || |::||:|| :||::::|:|| ::: | | | :|||:|| : :
Db         957 GAGUUUUUAGUCACCAGAGUUAAUACCUGGUUUUGUAAGUUUUCUAGAAUAGAUACUUUU 1016

Qy         486 ATTCTGTACAAGAGTGTTAGACAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATG 545
                :: :|:||||  |:|:    ||   | |    ||:||:||| |||:: ::   || |:|
Db        1017 CUUUUGUACAAAGGUGUGGCCCAUAAAAGUGUAGAUAGUGAGCAGUUUUAUACUGCAAUG 1076

Qy         546 GAAGACGCCTTTGCTTACAAGAAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTT 605
               |||||||| :    ::|||| || ||  : || |:|: ||||||  || |||    :| ::
Db        1077 GAAGACGCAUGGCAUUACAAAAAGACUCUUGCAAUGUGCAACAGCGAGAGAAUCCUCCUU 1136

Qy         606 AGAGACACGGCTTCGGTTAACTTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCG 665
                  ||  |  | :| |: || :  :||:: || || |:|| ||| |:||: |: |:|||
Db        1137 GAGGAUUCAUCAUCAGUCAAUUACUGGUUUCCCAAAAUGAGGGAUAUGGUCAUCGUACCA 1196

Qy         666 CTGTTTGAGGGTTCTATTACCAGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGT 725
                : :: ||   ::|: :    |  |  |||| |||  | |  || |:| : |:
Db        1197 UUAUUCGACAUUUCUUUGGAGACUAGUAAGAGGACGCGCAAGGAAGUCUUAGUGUCCAAG 1256

Qy         726 GACTTCGTTTACACAGTGCTTAATCATATCAGAACATATCAAGCCAAAGCGTTAACTTAC 785
               || ::||: :  ||||:||::|| || |:  |||||:| || || |||||  : || :||
Db        1257 GAUUUCGUGUUUACAGUGCUUAACCACAUUCGAACAUACCAGGCGAAAGCUCUUACAUAC 1316

Qy         786 CAGAACGTATTATCTTTCGTGGAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACT 845
                  || |: :: :|  : |: || :| |:  ||:|  | |: |: |: || ||:|: ||
Db        1317 GCAAAUGUUUUGUCCCUUGUCGAAUCGAUUCGAUCGAGGGUAAUCAUUAACGGUGUGACA 1376

Qy         846 GCTAGGTCTGAATGGGATGTAGATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTC 905
               || |||:| |||:||||:|: || ||| |  :  : |||  ||::|:| |:||| :: : |
Db        1377 GCGAGGUCCGAAUGGGAUGUGGACAAAUCUUUGUUACAAUCCUUGUCCAUGACGUUUUAC 1436

Qy         906 TTGCAGACTAAGCTGGCTGCGCTTCAAGACGATATAGTAATGGGAAAGTTTCGGTGCTTG 965
                :||| ||:||||: || |  |:  | || ||  :| : |:  | |||::: |   |
Db        1437 CUGCAUACUAAGCUUGCCGUUCUAAAGGAUGACUUACUGAUUAGCAAGUUUAGUCUCGGU 1496

Qy         966 GATAAGACCACTTCTGAACTTATTTGGGATGAGGTGGGCAAATTTTTTGGAAACGTTTTC 1025
                  || ||    :   | | : : :||||:||| :          :::|| ||||  ::
Db        1497 UCGAAAACGGUGUGCCAGCAUGUGUGGGAUGAGAUUUCGCUGGCGUUUGGGAACGCAUUU 1556

Qy        1026 CCCACTATCAAAGAGAGATTGGTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTG 1085
               ||| |  : ||||||||| :  :|| |||||||| :: :    |:    |   | ||  :
Db        1557 CCCUCCGUGAAAGAGAGACUCUUGAACAGGAAACUUAUCAGAGUGGCAGGCGACGCAUUA 1616

Qy        1086 AAGATCAAGATCCCAGATCTGTATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACC 1145
                |||:|| | : || ||:|: :|:|: || :   | ||||| :: |:  |:|| :|||
Db        1617 GAGAUCAGGGUGCCUGAUCUAUAUGUGACCUUCCACGACAGAUUAGUGACUGAGUACAAG 1676

Qy        1146 AAGTCTGAGGAGTTACCGCATCTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATG 1205
                  :|:| |||  : ||    |: || |: | |||| |  : |||||| | ||    |:|
Db        1677 GCCUCUGUGGACAUGCCUGCGCUUGACAUUAGGAAGAAGAUGGAAGAAACGGAAGUGAUG 1736

Qy        1206 TACGACGCGTTATCAGAATTATCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAG 1265
               :|| | ||  : :|||| ::|:|  :  :  | ||   |:||| || ::|||: : |
Db        1737 UACAAUGCACUUUCAGAGUUAUCGGUGUUAAGGGAGUCUGACAAAUUCGAUGUUGAUGUU 1796

Qy        1266 TTCAAAGACATGTGCAAGGCTTTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTT 1325
               ::     | |:|:||  | |::: || |::   ||       ||||||    |: |: |:
Db        1797 UUUUCCCAGAUGUGCCAAUCUUUGGAAGUUGACCCAAUGACGGCAGCGAAGGUUAUAGUC 1856

Qy        1326 GCAGTGGCCGAGAATAGAAGCGGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAAT 1385
               || |:       ||:   |||||: : ||:|: || :::||    || || |||| |||:
Db        1857 GCGGUCAUGAGCAAUGAGAGCGGUCUGACUCUCACAUUUGAACGACCUACUGAGGCGAAU 1916
```

```
Qy   1386 GTGGCTAAGGCTCT------TAAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCG 1439
          |: ||    ||: :      : ||   | ||| :| || |  |   :     ::    |
Db   1917 GUUGCGCUAGCUUUACAGGAUCAAGAGAAGGCUUCAGAAGGUGCAUUGGUAGUUACCUCA 1976

Qy   1440 ACATCCGAAGAGGTGAACGTAAATAAATTTTCTATTGCTGAGAAAGGGAGATTGCCTGTG 1499
          | |   |  || |        |  ||   ::| |: ||      || |  |      |
Db   1977 AGAGAAGUUGAAGAACCGUCCAUGAAGGGUUCGAUGGCCAGAGGAGAGUUACAAUUAGCU 2036

Qy   1500 TGTGCAGAAAGTCATGGTTTGACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTC 1559
           |:   |   |  |:  :  |  |    |  | :   || || ||||| : |||:|  :
Db   2037 GGUCUUGCUGGAGAUCAUCCGGAGUCGUCCUAUUCUAAGAACGAGGAGAUAGAGUCUUUA 2096

Qy   1560 AACGATTTCCATAAGGCTTGCGTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTC 1619
           |  | :: ||:| |||    |  ||:    : |::   ||||| |:|   :|| ::|:
Db   2097 GAGCAGUUUCAUAUGGCGACGGCAGAUUCGUUAAUUCGUAAGCAGAUGAGCUCGAUUGUG 2156

Qy   1620 TACACTGGCTCACTCAAAGTTCAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCG 1679
          :|||| ||  |  : ||||::|| ||||:||| |||: : : || ||  :|| ||| :|
Db   2157 UACACGGGUCCGAUUAAAGUUCAGCAAAUGAAAAACUUUAUCGAUAGCCUGGUAGCAUCA 2216

Qy   1680 TTGTCCGCCACTGTATCAAATCTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCT 1739
           : :| ||  | |: :| ||:|:   ||||   |: || ||:  ||  |    :||   :
Db   2217 CUAUCUGCUGCGGUGUCGAAUCUCGUCAAGAUCCUCAAAGAUACAGCUGCUAUUGACCUU 2276

Qy   1740 GATTCCAGGGAGAAAGTTGGTGTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCT 1799
          ||  || |  | ||  ::|| |: : |||:|:  | :  |  |||:|| :  :||||||
Db   2277 GAAACCCGUCAAAAGUUUGGAGUCUUGGAUGUUGCAUCUAGGAAGUGGUUAAUCAAACCA 2336

Qy   1800 GCGGCCAAAGGTCATTCATGGGGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCA 1859
           |||||||  |:||: ||:|||| |::|:        ||  | ||||      :   ||
Db   2337 ACGGCCAAGAGUCAUGCAUGGGGUGUUGUUGAAACCCACGCGAGGAAGUAUCAUGUGGCG 2396

Qy   1860 CTTCTATCTTATGAAGGAGATAGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTA 1919
          |:: :    :|:|| |   |  |  :||:|||       || :|||| || |: ||:|:
Db   2397 CUUUUGGAAUAUGAUGAGCAGGGUGUGGUGACAUGCGAUGAUUGGAGAAGAGUAGCUGUU 2456

Qy   1920 TCATCTGATACAATGGTATATTCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATG 1979
             :|:||  |  : |: :|::| || |: || || |:|  || :|:| | | |    :
Db   2457 AGCUCUGAGUCUGUUGUUUAUUCCGACAUGGCGAAACUCAGAACUCUGCGCAGACUGCUU 2516

Qy   1980 AGAGACGGTGAACCCCACGAACCTACTGCAAAGATGGTACTTGTGGATGGGTGCCTGGT 2039
           || |||| ||||| || |    :|  |||||| : |: |::|:||| || |: || ||
Db   2517 CGAAACGGAGAACCGCAUGUCAGUAGCGCAAAGGUUGUUCUUGUGGACGGAGUUCCGGGC 2576

Qy   2040 TGTGGAAAGTACAAAGGAGATTTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTT 2099
          :|:|||||   ||||| |  : ::   ||  :: |: ::||:|| ||: : |: :: |:
Db   2577 UGUGGAAAAACCAAAGAAAUUCUUUCCAGGGUUAAUUUUGAUGAAGAUCUAAUUUUAGUA 2636

Qy   2100 CCTGGAAAACAAGCTGCTGCTATGATCAGAAGAAGGGCTAATTCATCTGGACTGATAAGA 2159
          ||:|| || ||||| || |  |:||:||||||| | || ||::| :| ||  : |:
Db   2637 CCUGGGAAGCAAGCCGCGGAAAUGAUCAGAAGACGUGCGAAUUCCUCAGGGAUUAUUGUG 2696

Qy   2160 GCCACAATGGACAATGTGAGAACGGTAGATTCACTTCTAATGCAT---------CCAAAA 2210
          ||||| | |||||| |: | ||| |: ||::|  :  : |:| |:            | |
Db   2697 GCCACGAAGGACAACGUUAAAACCGUUGAUUCUUUCAUGAUGAAUUUUGGAAAAGCACA 2756

Qy   2211 CCGCGATCACACAAGAGGCTTTTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTT 2270
          |   |      ||||||| : :: |::||:||||||::||:| :||| || ||::|:|::
Db   2757 CGCUGUCAGUUCAAGAGGUUAUUCAUUGAUGAAGGGUUGAUGUUGCAUACUGGUUGUGUU 2816

Qy   2271 AACTTCCTGGTGCTTATCTCTGGTTGCGACATCGCATACATTTACGGAGATACACAGCAG 2330
          || :: |: |:|   |: :|    :|||| |: |||:|  :::||||||| |||||||||
Db   2817 AAUUUUCUUGUGGCGAUGUCAUUGUGCGAAAUUGCAUAUGUUUACGGAGACACACAGCAG 2876

Qy   2331 ATTCCTTTCATTAACAGAGTTCAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAA 2390
          |::|| : ||: || ||||::      ::||||:| |||   ||::::|  ||  :| ||
Db   2877 AUUCCAUACAUCAAUAGAGUUUCAGGAUUCCCGUACCCCGCCCAUUUUGCCAAAUUGGAA 2936

Qy   2391 GTGGATGAAGTTGAGATGAGGAGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTC 2450
          |: || || |: ||||   | || || || |:  | :| ||||  ||:|: |    ::
Db   2937 GUUGACGAGGUGGAGACACGCAGAACUACUCUCCGUUGUCCAGCCGAUGUCACACAUUAU 2996

Qy   2451 CTACAATCGAAGTACGAAGGAGCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCA 2510
          |:  |   ||  :| || ||    |: |  | |||::|  | |:  ||   :| |: :|
Db   2997 CUGAACAGGAGAUAUGAGGGCUUUGUCAUGAGCACUUCUUCGGUUAAAAAGUCUGUUUCG 3056

Qy   2511 TCTGAGATGATAGGCGGTAAGGGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGGAAA 2570
             ||||:| : |||||    |  |:  : ||     : :| |||||  :  | || ||
Db   3057 CAGGAGAUGGUCGGCGGAGCCGCCGUGAUCAAUCCGAUCUCAAAACCCUUGCAUGGCAAG 3116

Qy   2571 ATTGTAACTTTCACTCAGGCTGATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTG 2630
          |:  : ||::: || ||  | ||:|||   |   :       |  || :|:    |:|:
Db   3117 AUCCUGACUUUUACCCAAUCGGAUAAAGAAGCUCUGCUUUCAAGAGGGUAUUCAGAUGUU 3176

Qy   2631 AACACCGTTCATGAGATCCAAGGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACG 2690
           |||| |: ||:||  : ||||| || || :     ||:|: :| |: |: || :: ||
Db   3177 CACACUGUGCAUGAAGUGCAAGGCGAGACAUACUCUGAUGUUUCACUAGUUAGGUUAACC 3236

Qy   2691 GCAACTCCACTGACTCTGATTTCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGA 2750
           | || ||| :  |  : |:: |         ||| ||:|:: : |:|||  :| | ||
Db   3237 CCUACACCAGUCUCCAUCAUUGCAGGAGACAGCCCACAUGUUUUGGUCGCAUUGUCAAGG 3296

Qy   2751 CACACAAAGAGCTTCAAATATTACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGT 2810
          |||||        :||| :| :|||| |: |:  : ||:||:::||:    |: |::||
Db   3297 CACACCUGUUCGCUCAAGUACUACACUGUUGUUAUGGAUCCUUUAGUUAGUAUCAUUAGA 3356

Qy   2811 GATTTGTCTTCTTTAAGCTCCTTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGA 2870
          ||: :        : |||:| : | : ::||| |:|:|:| ||: || ||||| |    |
Db   3357 GAUCUAGAGAAACUUAGCUCGUACUUGUUAGAUAUGUAUAAGGUCGAUGCAGGAACACAA 3416

Qy   2871 TAGCAATTACAGATGGATGCAGTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAA 2930
          :|||||::|||||: ||  | |:|::||||||:   ||:|: :::|: ||| | || ||
Db   3417 UAGCAAUUACAGAUUGACUCGGUGUUCAAAGGUUCCAAUCUUUUUGUUGCAGCGCCAAAG 3476

Qy   2931 TCAGGAGACTTTCCAGATCTACAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACT 2990
           | || ||  :: | ||: : |||:: :| :| ||:   :| |:||| || || || ||
Db   3477 ACUGGUGAUAUUUCUGAUAUGCAGUUUUACUAUGAUAAGUGUCUCCCAGGCAACAGCACC 3536

Qy   2991 ATACTTAACAAGTATGATGCTGTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAG 3050
          |:  : || || : :||:||:|::||||:||||::   :|| | :    : ||:|: ||
Db   3537 AUGAUGAAUAAUUUUGAUGCUGUUACCAUGAGGUUGACUGACAUUUCAUUGAAUGUCAAA 3596

Qy   3051 GATTGTGTTCTTGATTTTTCCAAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTA 3110
          ||::|  :  : ||: : :| ||   : ::|    ||| |||||    |    |   |:|
Db   3597 GAUUGCAUAUUGGAUAUGUCUAAGUCUGUUCGUGCGCCUAAGGAUCAAAUCAAACCACUA 3656

Qy   3111 GAGCCAGTTTTGCGTACCGCGGCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTG 3170
             ||  :  : || || ||||| |||  |||| |     | ||||:| : |||||: :
Db   3657 AUACCUAUGGUACGAACGGCGGCAGAAAUGCCACGCCAGACUGGACUAUUGGAAAAUUUA 3716

Qy   3171 GTTGCAATGATTAAAAGAAATTTCAACGCACCAGACCTGACGGGGACGATTGACATTGAG 3230
          |: || |:||::|||||||| :: |||||||| ||  :| | || |  |::|| |::||
Db   3717 GUGGCGAUGAUUAAAAGAAACUUUAACGCACCCGAGUUGUCUGGCAUCAUUGAUAUUGAA 3776

Qy   3231 AGCACCGCATCTGTTGTAGTAGATAAGTTTTTTGATAGCTATTTTATTAAAAAAGAAAAA 3290
          |  || |||:|: : |: |:|||:|||::::::||:|| :|:::  ::||| || ||| |
Db   3777 AAUACUGCAUCUUUGGUUGUAGAUAAGUUUUUUGAUAGUUAUUUGCUUAAAGAAAAAAGA 3836

Qy   3291 TACACAAAAAATATTGCTGGAGTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAAC 3350
           |  |||| || | :| :    :| : |  |  || :|  : |  |||:||:: |||||
Db   3837 AAACCAAAUAAAAAUGUUUCUUUGUUCAGUAGAGAGUCUCUCAAUAGAUGGUUAGAAAAG 3896

Qy   3351 AGGAAAGAAGTACTATTGGACGACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATC 3410
            | || | |:|  | : | | |  : ||  | :   |::::   ||: :||| ||  :
Db   3897 CAGGAACAGGUAACAAUAGGCCAGCUCGCAGAUUUUGAUUUUGUGGAUUUGCCAGCAGUU 3956

Qy   3411 GATCAGTACAAGCACATGATCAAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAG 3470
          ||:|||:|||  ||||:||: || || ||||| ||||| || ::||||  ::|||: ||
Db   3957 GAUCAGUACAGACACAUGAUUAAAGCACAACCCAAACAAAAGUUGGACACUUCAAUCCAA 4016

Qy   3471 AATGAATACCCTGCTCTGCAAACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTG 3530
          |  || :|||| ||: :||| || |::|: :||||::| ||  |||:||| |  |: ::
Db   4017 ACGGAGUACCCGGCUUUGCAGACGAUUGUGUACCAUUCAAAAAAGAUCAAUGCAAUAUUC 4076

Qy   3531 GCCGGTTTCT---CAGAGCTTACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTT 3587
          | |   :: :     ||||::|| |||    : |: ||     ::||::| |  |  :::
```

```
Db       4077 GGCCCGUUGUUUAGUGAGCUUACUAGGCAAUUACUGGACAGUGUUGAUUCGAGCAGAUUU 4136

Qy       3588 CTTTTCTTTACTAGGAAAACTCCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCG 3647
               : :: :: || || || || ||||  ||||:: | || :: ::|   ||:|:||||
Db       4137 UUGUUUUUCACAAGAAAGACACCAGCGCAGAUUGAGGAUUUCUUCGGAGAUCUCGACAGU 4196

Qy       3648 CACGTTCCTATGGATGTGTTAGAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAG 3707
              || |: || |:|||:|: :: || |:|||:|: :| || :| || || :| ||||| ||
Db       4197 CAUGUGCCGAUGGAUGUCUUGGAGCUGGAUAUAUCAAAAUACGACAAAUCUCAGAAUGAA 4256

Qy       3708 TTTCATTGTGCTGTAGAGTATGAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCC 3767
              :: || :|:|| |:||| :| || |: :||  ||||::|||: :  | || :: ::||
Db       4257 UUCCACUGUGCAGUAGAAUACGAGAUCUGGCGAAGAUUGGGUUUUGAAGACUUCUUGGGA 4316

Qy       3768 GAAGTGTGGAAACAAGGGCACAGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAG 3827
              ||||: :||||||||||||| || || || ||  : |||||::| |  || || |: ||
Db       4317 GAAGUUUGGAAACAAGGGCAUAGAAAGACCACCCUCAAGGAUUAUACCGCAGGUAUAAAA 4376

Qy       3828 ACATGTCTGTGGTATCAAAGGAAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTT 3887
              || :|  : :||:|:||||| ||| |||| || |: || |: || ::||: || || ||:|:
Db       4377 ACUUGCAUCUGGUAUCAAAGAAAGAGCGGGGACGUCACGACGUUCAUUGGAAACACUGUG 4436

Qy       3888 ATAATAGCAGCTTGCTTGGGTTCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTT 3947
              |: |: || || :| ::||  :| |:| : ||||:||| ||  : |: ||||| ||| :::
Db       4437 AUCAUUGCUGCAUGUUUGGCCUCGAUGCUUCCGAUGGAGAAAAUAAUCAAAGGAGCCUUU 4496

Qy       3948 TGTGGAGACGATTCCGTTTTGTATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCA 4007
              :| || |||||:    :  :|:| :::||||||||::  || :: || ||  : ||
Db       4497 UGCGGUGACGAUAGUCUGCUGUACUUUCCAAAGGGUUGUGAGUUUCCGGAUGUGCAACAC 4556

Qy       4008 TGTGCTAATCTCATGTGGAATTTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTT 4067
              :  || ||:|: |:|:||||::::|| || ||||:|: :| |||   |:| || :||:::
Db       4557 UCCGCGAAUCUUAUGUGGAAUUUUGAAGCAAAACUGUUUAAAAAACAGUAUGGAUACUUU 4616

Qy       4068 TGTGGTAGATACATCATACACCATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAG 4127
              :| || |||:|  : |:||| || || |  |||   |: |:|:|::| ||:||  : |||
Db       4617 UGCGGAAGAUAUGUAAUACAUCACGACAGAGGAUGCAUUGUGUAUUACGAUCCCCUAAAG 4676

Qy       4128 TTGATCTCCAAACTTGGGGCAAAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGG 4187
              ::||:|:| ||||::|| || ||||| |:||||||::  || |||:: || |||:: ||
Db       4677 UUGAUCUCGAAACUUGGUGCUAAACACAUCAAGGAUUGGGAACACUUGGAGGAGUUCAGA 4736

Qy       4188 GTGTCTTTGTGCGATGTTGCTTGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTG 4247
                |:|: : :| ||:|::||:  ::|| :    |||   :|       :   | ||| :|
Db       4737 AGGUCUCUUUGUGAUGUUGCUGUUUCGUU---GAACAAUUGUGCGUAUUACACACAGUUG 4793

Qy       4248 AACGCAGCTATCAAGGAGGTTCATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGT 4307
               |||  ||: :   |||||::||:|| |||||   :   ||::||:::| :: :||  |:
Db       4794 GACGACGCUGUAUGGGAGGUUCAUAAGACCGCCCCUCCAGGUUCGUUUGUUUAUAAAAGU 4853

Qy       4308 GTTAACAAATTTTTGTGTGATAAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAG 4367
               :    || : :::|: :||:||| :: : :::|||| :::|::: :| |:|||: :
Db       4854 CUGGUGAAGUAUUUGUCUGAUAAAGUUCUUUUUAGAAGUUUGUUUAUAGAUGGCUCUAGU 4913

Qy       4368 TCTCAGAGATACTGTCAAAATTAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACT 4427
              : : | ||  |  |: || |: |  |||:: |: || |: :| |||  |||  |||:  :
Db       4914 UGUUAAAGGAAAAGUGAAUAUCAAUGAGUUUAUCGACCUGUCAAAAAUGGAGAAGAUCUU 4973

Qy       4428 TCCGGCATTCATGACTAAGGTCAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGC 4487
               ||| |  :  : ||    |: |||||:|::|     :|  |  |: || || |: |:||
Db       4974 ACCGUCGAUGUUUACCCCUGUAAAGAGUGUUAUGUGUUCCAAAGUUGAUAAAAUAAUGGU 5033

Qy       4488 TGTTAAGAATGATAGTCTTTCTGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAA 4547
              :  : ||||:||     : :| || |:  |  : |::||||| |::||| :  :: | |
Db       5034 UCAUGAGAAUGAGUCAUUGUCAGAGGUGAACCUUCUUAAAGGAGUUAAGCUUAUUGAUAG 5093

Qy       4548 AGGGTATGTGTGCTTAGCTGATTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTG 4607
               || :| |: :| ::||| | :::||: |:  | || |||:||||  : || || || :|
Db       5094 UGGAUACGUCUGUUUAGCCGGUUUGGUCGUCACGGGCGAGUGGAACUUGCCUGACAAUUG 5153

Qy       4608 CCGTGGTGGTGTCAGTGTTTGTATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAAC 4667
              | | || ||:|: || |: :|: : |: || || || |:| ||||     | || || ||
Db       5154 CAGAGGAGGUGUGAGCGUGUGUCUGGUGGACAAAAGGAUGGAAAGAGCCGACGAGGCCAC 5213

Qy       4668 GCTGGGTGCGTATCACGCCCCTGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAA 4727
               |: ||  | :|  || |  | ||:   || || |  :::   :: ||| :  : || ||
Db       5214 UCUCGGAUCUUACUACACAGCAGCUGCAAAGAAAAGAUUUCAGUUCAAGGUCGUUCCCAA 5273

Qy       4728 TTATTCAATAACATCCGAGGATGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAA 4787
              ::|: | |:|||  || |||| ||   |||  ||   :||||||: ::||: ||:|: |
Db       5274 UUAUGCUAUAACCACCCAGGACGCGAUGAAAAACGUCUGGCAAGUUUUAGUUAAUAUUAG 5333

Qy       4788 AGGAGTGGCTATGGAAGAAGGATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGT 4847
              |   |:|   |:|  ||  || : |:|:||  : :|: :||||:: |: :|  : :|: :
Db       5334 AAAUGUGAAGAUGUCAGCGGGUUUCUGUCCGCUUUCUCUGGAGUUUGUGUCGGUGUGUAU 5393

Qy       4848 AGTACATAAAAATAATGTAAGAAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGG 4907
               |:  |:| |||:||: :|| |  |||:::||| ||    |::   |  |:|| ||||||
Db       5394 UGUUUAUAGAAAUAAUAUAAAAUUAGGUUUGAGAGAGAAGAUUACAAACGUGAGAGACGG 5453

Qy       4908 CTCGCCAATTGAACTCACTGAAAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGC 4967
                 ||| |: ||||: || ||| | | |: |:|| |||::| :||| || |: || |:| |
Db       5454 AGGGCCCAUGGAACUUACAGAAGAAGUCGUUGAUGAGUUCAUGGAAGAUGUCCCUAUGUC 5513

Qy       4968 TGTGA 4972
                : |
Db       5514 GAUCA 5518

RESULT 4
US-09-962-527-1
; Sequence 1, Application US/09962527
; Patent No. 6740740
;   GENERAL INFORMATION:
;         APPLICANT: GARGER, STEPHEN
;                    HOLTZ, R. BARRY
;                    McCULLOCH, MICHAEL
;                    TURPEN, THOMAS
;         TITLE OF INVENTION: A PROCESS FOR ISOLATING AND
;                             PURIFYING VIRUSES SOLUBLE PROTEINS AND PEPTIDES
;                             FROM PLANT SOURCES
;         NUMBER OF SEQUENCES: 5
;         CORRESPONDENCE ADDRESS:
;              ADDRESSEE: Howrey & Simon
;              STREET: 1299 Pennsylvania Avenue N.W.
;              CITY: Washington
;              STATE: DC
;              COUNTRY: USA
;              ZIP: 20004
;         COMPUTER READABLE FORM:
;              MEDIUM TYPE: Diskette
;              COMPUTER: IBM Compatible
;              OPERATING SYSTEM: DOS
;              SOFTWARE: FastSEQ for Windows Version 2.0
;         CURRENT APPLICATION DATA:
;              APPLICATION NUMBER: US/09/962,527
;              FILING DATE: 24-Sep-2001
;              CLASSIFICATION: <Unknown>
;         PRIOR APPLICATION DATA:
;              APPLICATION NUMBER: 09/037,751
;              FILING DATE: 10-march-1998
;         ATTORNEY/AGENT INFORMATION:
;              NAME: Halluin, Albert P
;              REGISTRATION NUMBER: 25,277
;              REFERENCE/DOCKET NUMBER: 00801.0140.999
;         TELECOMMUNICATION INFORMATION:
;              TELEPHONE: 650-463-8109
;              TELEFAX: 650-463-8400
;              TELEX: <Unknown>
;   INFORMATION FOR SEQ ID NO: 1:
;         SEQUENCE CHARACTERISTICS:
;              LENGTH: 6395 base pairs
;              TYPE: nucleic acid
;              STRANDEDNESS: single
;              TOPOLOGY: unknown
;         MOLECULE TYPE: Genomic RNA
```

```
;        SEQUENCE DESCRIPTION: SEQ ID NO: 1:
US-09-962-527-1

  Query Match             40.9%;  Score 2034.2;  DB 4;  Length 6395;
  Best Local Similarity   44.4%;  Pred. No. 0;
  Matches 2214;  Conservative  957;  Mismatches 1793;  Indels   21;  Gaps    4;

Qy          6 AAGGTAATTCCTGAGTTTCAAAGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAA 65
Db        537 AAAACAGUCCCCAACUUCCAAAAGGAAGCAUUUGACAGAUACGCAGAAAUUCCUGAAGAC 596

Qy         66 GTCTGCTGCTCTAAAACTTTTCAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGA 125
Db        597 GCUGUCUGUCACAAUACUUUCCAGACAAUGCGACAUCAGCCGAUGCAGCAAUCAGGCAGA 656

Qy        126 AGATACGCTGTTGCTCTGCACAGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCG 185
Db        657 GUGUAUGCCAUUGCGCUACACAGCAUAUAUGACAUACCAGCCGAUGAGUUCGGGGCGGCA 716

Qy        186 TTAATATCTAAGAATATACATGTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTA 245
Db        717 CUCUUGAGGAAAAAUGUCCAUACGUGCUAUGCCGCUUUCCACUUCUCCGAGAACCUGCUU 776

Qy        246 CTAGACCAGACGGAGGTTACGCTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGAT 305
Db        777 CUUGAAGAUUCAUACGUCAAUUUGGACGAAAUCAACGCGUGUUUUUCGCGCGAUGGAGAC 836

Qy        306 GATGTTTCTTTTTTCTTTGCTGATGAAAGTACTTTAAATTATAGTCATAAATACAAAAAT 365
Db        837 AAGUUGACCUUUUCUUUUGCAUCAGAGAGUACUCUUAAUUAUUGUCAUAGUUAUUCUAAU 896

Qy        366 ATCTTGCATTATGTAGTTAAATCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAG 425
Db        897 AUUCUUAAGUAUGUGUGCAAAACUUACUUCCCGGCCUCUAAUAGAGAGGUUUACAUGAAG 956

Qy        426 GAATTTTTAGTCACTAGGGTTAATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTAT 485
Db        957 GAGUUUUUAGUCACCAGAGUUAAUACCUGGUUUUGUAAGUUUUCUAGAAUAGAUACUUUU 1016

Qy        486 ATTCTGTACAAGAGTGTTAGACAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATG 545
Db       1017 CUUUUGUACAAAGGUGUGGCCCAUAAAAGUGUAGAUAGUGAGCAGUUUUAUACUGCAAUG 1076

Qy        546 GAAGACGCCTTTGCTTACAAGAAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTT 605
Db       1077 GAAGACGCAUGGCAUUACAAAAAGACUCUUGCAAUGUGCAACAGCGAGAGAAUCCUCCUU 1136

Qy        606 AGAGACACGGCTTCGGTTAACTTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCG 665
Db       1137 GAGGAUUCAUCAUCAGUCAAUUACUGGUUUCCCAAAAUGAGGGAUAUGGUCAUCGUACCA 1196

Qy        666 CTGTTTGAGGGTTCTATTACCAGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGT 725
Db       1197 UUAUUCGACAUUUCUUUGGAGACUAGUAAGAGGACGCGCAAGGAAGUCUUAGUGUCCAAG 1256

Qy        726 GACTTCGTTTACACAGTGCTTAATCATATCAGAACATATCAAGCCAAAGCGTTAACTTAC 785
Db       1257 GAUUUCGUGUUUACAGUGCUUAACCACAUUCGAACAUACCAGGCGAAAGCUCUUACAUAC 1316

Qy        786 CAGAACGTATTATCTTTCGTGGAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACT 845
Db       1317 GCAAAUGUUUUGUCCCUUGUCGAAUCGAUUCGAUCGAGGGUAAUCAUUAACGGUGUGACA 1376

Qy        846 GCTAGGTCTGAATGGGATGTAGATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTC 905
Db       1377 GCGAGGUCCGAAUGGGAUGUGGACAAAUCUUUGUUACAAUCCUUGUCCAUGACGUUUUAC 1436

Qy        906 TTGCAGACTAAGCTGGCTGCGCTTCAAGACGATATAGTAATGGGAAAGTTTCGGTGCTTG 965
Db       1437 CUGCAUACUAAGCUUGCCGUUCUAAAGGAUGACUUACUGAUUAGCAAGUUUAGUCUCGGU 1496

Qy        966 GATAAGACCACTTCTGAACTTATTTGGGATGAGGTGGGCAAATTTTTTGGAAACGTTTTC 1025
```

```
Db       1497 UCGAAAACGGUGUGCCAGCAUGUGUGGGAUGAGAUUUCGCUGGCGUUUGGGAACGCAUUU 1556

Qy       1026 CCCACTATCAAAGAGAGATTGGTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTG 1085
Db       1557 CCCUCCGUGAAAGAGAGACUCUUGAACAGGAAACUUAUCAGAGUGGCAGGCGACGCAUUA 1616

Qy       1086 AAGATCAAGATCCCAGATCTGTATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACC 1145
Db       1617 GAGAUCAGGGUGCCUGAUCUAUAUGUGACCUUCCACGACAGAUUAGUGACUGAGUACAAG 1676

Qy       1146 AAGTCTGAGGAGTTACCGCATCTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATG 1205
Db       1677 GCCUCUGUGGACAUGCCUGCGCUUGACAUUAGGAAGAAGAUGGAAGAAACGGAAGUGAUG 1736

Qy       1206 TACGACGCGTTATCAGAATTATCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAG 1265
Db       1737 UACAAUGCACUUUCAGAGUUAUCGGUGUUAAGGGAGUCUGACAAAUUCGAUGUUGAUGUU 1796

Qy       1266 TTCAAAGACATGTGCAAGGCTTTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTT 1325
Db       1797 UUUUCCCAGAUGUGCCAAUCUUUGGAAGUUGACCCAAUGACGGCAGCGAAGGUUAUAGUC 1856

Qy       1326 GCAGTGGCCGAGAATAGAAGCGGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAAT 1385
Db       1857 GCGGUCAUGAGCAAUGAGAGCGGUCUGACUCUCACAUUUGAACGACCUACUGAGGCGAAU 1916

Qy       1386 GTGGCTAAGGCTCT------TAAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCG 1439
Db       1917 GUUGCGCUAGCUUUACAGGAUCAAGAGAAGGCUUCAGAAGGUGCAUUGGUAGUUACCUCA 1976

Qy       1440 ACATCCGAAGAGGTGAACGTAAATAAATTTTCTATTGCTGAGAAAGGGAGATTGCCTGTG 1499
Db       1977 AGAGAAGUUGAAGAACCGUCCAUGAAGGGUUCGAUGGCCAGAGGAGAGUUACAAUUAGCU 2036

Qy       1500 TGTGCAGAAAGTCATGGTTTGACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTC 1559
Db       2037 GGUCUUGCUGGAGAUCAUCCGGAGUCGUCCUAUUCUAAGAACGAGGAGAUAGAGUCUUUA 2096

Qy       1560 AACGATTTCCATAAGGCTTGCGTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTC 1619
Db       2097 GAGCAGUUUCAUAUGGCGACGGCAGAUUCGUUAAUUCGUAAGCAGAUGAGCUCGAUUGUG 2156

Qy       1620 TACACTGGCTCACTCAAAGTTCAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCG 1679
Db       2157 UACACGGGUCCGAUUAAAGUUCAGCAAAUGAAAAACUUUAUCGAUAGCCUGGUAGCAUCA 2216

Qy       1680 TTGTCCGCCACTGTATCAAATCTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCT 1739
Db       2217 CUAUCUGCUGCGGUGUCGAAUCUCGUCAAGAUCCUCAAAGAUACAGCUGCUAUUGACCUU 2276

Qy       1740 GATTCCAGGGAGAAAGTTGGTGTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCT 1799
Db       2277 GAAACCCGUCAAAAGUUUGGAGUCUUGGAUGUUGCAUCUAGGAAGUGGUUAAUCAAACCA 2336

Qy       1800 GCGGCCAAAGGTCATTCATGGGGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCA 1859
Db       2337 ACGGCCAAGAGUCAUGCAUGGGGUGUUGUUGAAACCCACGCGAGGAAGUAUCAUGUGGCG 2396

Qy       1860 CTTCTATCTTATGAAGGAGATAGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTA 1919
Db       2397 CUUUUGGAAUAUGAUGAGCAGGGUGUGGUGACAUGCGAUGAUUGGAGAAGAGUAGCUGUU 2456

Qy       1920 TCATCTGATACAATGGTATATTCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATG 1979
Db       2457 AGCUCUGAGUCUGUUGUUUAUUCCGACAUGGCGAAACUCAGAACUCUGCGCAGACUGCUU 2516

Qy       1980 AGAGACGGTGAACCCCACGAACCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGT 2039
Db       2517 CGAAACGGAGAACCGCAUGUCAGUAGCGCAAAGGUUGUUCUUGUGGACGGAGUUCCGGGC 2576

Qy       2040 TGTGGAAAGTACAAAGGAGATTTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTT 2099
Db       2577 UGUGGAAAAACCAAAGAAAUUCUUUCCAGGGUUAAUUUUGAUGAAGAUCUAAUUUUAGUA 2636
```

```
Qy   2100 CCTGGAAAACAAGCTGCTGCTATGATCAGAAGAAGGGCTAATTCATCTGGACTGATAAGA 2159
          ||:|| || ||||| || |  |:||:||||||| | || ||::| :| ||  : |:
Db   2637 CCUGGGAAGCAAGCCGCGGAAAUGAUCAGAAGACGUGCGAAUUCCUCAGGGAUUAUUGUG 2696

Qy   2160 GCCACAATGGACAATGTGAGAACGGTAGATTCACTTCTAATGCAT---------CCAAAA 2210
          ||||| | ||||||| |: | ||| |: ||::|  :  : |:| |:            | |
Db   2697 GCCACGAAGGACAACGUUAAAACCGUUGAUUCUUUCAUGAUGAAUUUUGGGAAAAGCACA 2756

Qy   2211 CCGCGATCACACAAGAGGCTTTTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTT 2270
          |   |      ||||||| : :: |::||:||||||::||:| :||| || ||::|:|::
Db   2757 CGCUGUCAGUUCAAGAGGUUAUUCAUUGAUGAAGGGUUGAUGUUGCAUACUGGUUGUGUU 2816

Qy   2271 AACTTCCTGGTGCTTATCTCTGGTTGCGACATCGCATACATTTACGGAGATACACAGCAG 2330
          || :: |: |:|   |: :|    :|||| |: |||:|  :::||||||| |||||||||
Db   2817 AAUUUUCUUGUGGCGAUGUCAUUGUGCGAAAUUGCAUAUGUUUACGGAGACACACAGCAG 2876

Qy   2331 ATTCCTTTCATTAACAGAGTTCAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAA 2390
          |::|| : ||: || ||||::      ::||||:| |||   ||::::|  ||  :| ||
Db   2877 AUUCCAUACAUCAAUAGAGUUUCAGGAUUCCCGUACCCCGCCCAUUUUGCCAAAUUGGAA 2936

Qy   2391 GTGGATGAAGTTGAGATGAGGAGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTC 2450
          |: || || |: ||||   | || || || |:  | :| ||||  ||:|: |    ::
Db   2937 GUUGACGAGGUGGAGACACGCAGAACUACUCUCCGUUGUCCAGCCGAUGUCACACAUUAU 2996

Qy   2451 CTACAATCGAAGTACGAAGGAGCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCA 2510
          |:  |   ||  :| || ||    |: |  | |||::|  | |:  ||   :| |: :|
Db   2997 CUGAACAGGAGAUAUGAGGGCUUUGUCAUGAGCACUUCUUCGGUUAAAAAGUCUGUUUCG 3056

Qy   2511 TCTGAGATGATAGGCGGTAAGGGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGGAAA 2570
             ||||:| : |||||    |  |:  : ||     : :| |||||  :  | || ||
Db   3057 CAGGAGAUGGUCGGCGGAGCCGCCGUGAUCAAUCCGAUCUCAAAACCCUUGCAUGGCAAG 3116

Qy   2571 ATTGTAACTTTCACTCAGGCTGATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTG 2630
          |:  : ||::: || ||  | ||:|||   |   :       |  || :|:    |:|:
Db   3117 AUCCUGACUUUUACCCAAUCGGAUAAAGAAGCUCUGCUUUCAAGAGGGUAUUCAGAUGUU 3176

Qy   2631 AACACCGTTCATGAGATCCAAGGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACG 2690
           |||| |: ||:||  : ||||| || || :     ||:|: :| |: |: || :: ||
Db   3177 CACACUGUGCAUGAAGUGCAAGGCGAGACAUACUCUGAUGUUUCACUAGUUAGGUUAACC 3236

Qy   2691 GCAACTCCACTGACTCTGATTTCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGA 2750
           | || ||| :  |  : |:: |         ||| ||:|:: : |:|||  :| | ||
Db   3237 CCUACACCAGUCUCCAUCAUUGCAGGAGACAGCCCACAUGUUUUGGUCGCAUUGUCAAGG 3296

Qy   2751 CACACAAAGAGCTTCAAATATTACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGT 2810
          |||||        :||| :| :|||| |: |:  : ||:||:::||:    |: |::||
Db   3297 CACACCUGUUCGCUCAAGUACUACACUGUUGUUAUGGAUCCUUUAGUUAGUAUCAUUAGA 3356

Qy   2811 GATTTGTCTTCTTTAAGCTCCTTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGA 2870
          ||: :        : |||:| : | : ::||| |:|:|:| ||: || ||||| |    |
Db   3357 GAUCUAGAGAAACUUAGCUCGUACUUGUUAGAUAUGUAUAAGGUCGAUGCAGGAACACAA 3416

Qy   2871 TAGCAATTACAGATGGATGCAGTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAA 2930
          :|||||::|||||: ||  | |:|::||||||:   ||:|: :::|: ||| | || ||
Db   3417 UAGCAAUUACAGAUUGACUCGGUGUUCAAAGGUUCCAAUCUUUUUGUUGCAGCGCCAAAG 3476

Qy   2931 TCAGGAGACTTTCCAGATCTACAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACT 2990
           | || ||  :: | ||: : |||:: :| :| ||:   :| |:||| || || || ||
Db   3477 ACUGGUGAUAUUUCUGAUAUGCAGUUUUACUAUGAUAAGUGUCUCCCAGGCAACAGCACC 3536

Qy   2991 ATACTTAACAAGTATGATGCTGTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAG 3050
          |:  : || || : :||:||:|::||||:||||::   :|| | :    : ||:|: ||
Db   3537 AUGAUGAAUAAUUUUGAUGCUGUUACCAUGAGGUUGACUGACAUUUCAUUGAAUGUCAAA 3596

Qy   3051 GATTGTGTTCTTGATTTTTCCAAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTA 3110
          ||::|  :  : ||: : :| ||   : ::|    ||| |||||    |    |   |:|
Db   3597 GAUUGCAUAUUGGAUAUGUCUAAGUCUGUUCGUGCGCCUAAGGAUCAAAUCAAACCACUA 3656

Qy   3111 GAGCCAGTTTTGCGTACCGCGGCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTG 3170
             ||  :  : || || ||||| |||  |||| |     | ||||:| : |||||: :
Db   3657 AUACCUAUGGUACGAACGGCGGCAGAAAUGCCACGCCAGACUGGACUAUUGGAAAAUUUA 3716
```

```
Qy   3171 GTTGCAATGATTAAAAGAAATTTCAACGCACCAGACCTGACGGGGACGATTGACATTGAG 3230
          |: || |:||::|||||||| :: |||||||| ||  :| | || |  |::|| |::||
Db   3717 GUGGCGAUGAUUAAAAGAAACUUUAACGCACCCGAGUUGUCUGGCAUCAUUGAUAUUGAA 3776

Qy   3231 AGCACCGCATCTGTTGTAGTAGATAAGTTTTTGATAGCTATTTTATTAAAAAAGAAAAAA 3290
          |  || |||:|: : |: |:|||:|||:::::||:|| :|:::  ::||| || |||| |
Db   3777 AAUACUGCAUCUUUGGUUGUAGAUAAGUUUUUGAUAGUUAUUUGCUUAAAGAAAAAAAGA 3836

Qy   3291 TACACAAAAAATATTGCTGGAGTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAAC 3350
           |  |||| || | :| :    :| : |  |  || :|  : |  |||:||:: |||||
Db   3837 AAACCAAAUAAAAAUGUUUCUUUGUUCAGUAGAGAGUCUCUCAAUAGAUGGUUAGAAAAG 3896

Qy   3351 AGGAAAGAAGTACTATTGGACGACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATC 3410
            | || | |:|  | : | | |  : ||  | :   |::::   ||: :||| ||  :
Db   3897 CAGGAACAGGUAACAAUAGGCCAGCUCGCAGAUUUUGAUUUUGUGGAUUUGCCAGCAGUU 3956

Qy   3411 GATCAGTACAAGCACATGATCAAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAG 3470
          ||:|||:|||  ||||:||: || || ||||| ||||| || ::||||  ::|||: ||
Db   3957 GAUCAGUACAGACACAUGAUUAAAGCACAACCCAAACAAAAGUUGGACACUUCAAUCCAA 4016

Qy   3471 AATGAATACCCTGCTCTGCAAACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTG 3530
          |  || :|||| ||: :||| || |::|: :||||::| ||  |||:||| |  |: ::
Db   4017 ACGGAGUACCCGGCUUUGCAGACGAUUGUGUACCAUUCAAAAAAGAUCAAUGCAAUAUUC 4076

Qy   3531 GCCGGTTTCT---CAGAGCTTACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTT 3587
          | |   :: :     ||||::|| |||    : |: ||     ::||::| |  |  :::
Db   4077 GGCCCGUUGUUUAGUGAGCUUACUAGGCAAUUACUGGACAGUGUUGAUUCGAGCAGAUUU 4136

Qy   3588 CTTTTCTTTACTAGGAAAACTCCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCG 3647
           : :: :: || || || ||||  ||||:: | || :: ::|   ||:|:||||
Db   4137 UUGUUUUUCACAAGAAAGACACCAGCGCAGAUUGAGGAUUUCUUCGGAGAUCUCGACAGU 4196

Qy   3648 CACGTTCCTATGGATGTGTTAGAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAG 3707
          || |: || |:|||:|: :: || |:|||:|: :| || :| || || :| ||||| ||
Db   4197 CAUGUGCCGAUGGAUGUCUUGGAGCUGGAUAUAUCAAAAUACGACAAAUCUCAGAAUGAA 4256

Qy   3708 TTTCATTGTGCTGTAGAGTATGAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCC 3767
          :: || :|:|| |:||| :| || |: :||  ||||::|||: :  | || :: ::||
Db   4257 UUCCACUGUGCAGUAGAAUACGAGAUCUGGCGAAGAUUGGGUUUUGAAGACUUCUUGGGA 4316

Qy   3768 GAAGTGTGGAAACAAGGGCACAGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAG 3827
          ||||: :|||||||||||||| || || || ||  : |||||::| |  || || |: ||
Db   4317 GAAGUUUGGAAACAAGGGCAUAGAAAGACCACCCUCAAGGAUUAUACCGCAGGUAUAAAA 4376

Qy   3828 ACATGTCTGTGGTATCAAAGGAAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTT 3887
          || :|  : :||:|:||||| || |||||| |: || || ::||: || || ||:|:
Db   4377 ACUUGCAUCUGGUAUCAAAGAAAGAGCGGGGACGUCACGACGUUCAUUGGAAACACUGUG 4436

Qy   3888 ATAATAGCAGCTTGCTTGGGTTCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTT 3947
          |: |: || || :| ::||  :| |:| : ||||:||| ||  : |: ||||| || :::
Db   4437 AUCAUUGCUGCAUGUUUGGCCUCGAUGCUUCCGAUGGAGAAAAUAAUCAAAGGAGCCUUU 4496

Qy   3948 TGTGGAGACGATTCCGTTTTGTATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCA 4007
          :| || |||||:    :  :|:| :::||||||||::  || :: || ||  : ||
Db   4497 UGCGGUGACGAUAGUCUGCUGUACUUUCCAAAGGGUUGUGAGUUUCCGGAUGUGCAACAC 4556

Qy   4008 TGTGCTAATCTCATGTGGAATTTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTT 4067
          :  || ||:|: |:|:||||::::|| || ||||:|: :| |||   |:| || :||:::
Db   4557 UCCGCGAAUCUUAUGUGGAAUUUUGAAGCAAAACUGUUUAAAAAACAGUAUGGAUACUUU 4616

Qy   4068 TGTGGTAGATACATCATACACCATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAG 4127
          :| || |||:|  : |:||| || || |  |||   |: |:|:|::| ||:||  : |||
Db   4617 UGCGGAAGAUAUGUAAUACAUCACGACAGAGGAUGCAUUGUGUAUUACGAUCCCCUAAAG 4676

Qy   4128 TTGATCTCCAAACTTGGGGCAAAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGG 4187
          ::||:|:| ||||::|| || ||||| |:||||||::  || |||:: || |||:: ||
Db   4677 UUGAUCUCGAAACUUGGUGCUAAACACAUCAAGGAUUGGGAACACUUGGAGGAGUUCAGA 4736

Qy   4188 GTGTCTTTGTGCGATGTTGCTTGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTG 4247
            |:|: : :| ||:|::||:  ::|| :    |||   :|       :   | ||| :|
Db   4737 AGGUCUCUUUGUGAUGUUGCUGUUUCGUU---GAACAAUUGUGCGUAUUACACACAGUUG 4793

Qy   4248 AACGCAGCTATCAAGGAGGTTCATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGT 4307
```

```
               |||  ||: :   |||||::||:|| |||||   :   ||::||:::| :: :||  |:
Db        4794 GACGACGCUGUAUGGGAGGUUCAUAAGACCGCCCCUCCAGGUUCGUUUGUUUAUAAAAGU 4853

Qy        4308 GTTAACAAATTTTTGTGTGATAAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAG 4367
                :    || : :::|: :||:||| :: : :::|||| :::|::: :| |:|||: :
Db        4854 CUGGUGAAGUAUUUGUCUGAUAAAGUUCUUUUUAGAAGUUUGUUUAUAGAUGGCUCUAGU 4913

Qy        4368 TCTCAGAGATACTGTCAAAATTAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACT 4427
               : : | ||  |  |: || |: |  |||:: |: || |: :| |||  |||  |||:  :
Db        4914 UGUUAAAGGAAAAGUGAAUAUCAAUGAGUUUAUCGACCUGUCAAAAAUGGAGAAGAUCUU 4973

Qy        4428 TCCGGCATTCATGACTAAGGTCAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGC 4487
                ||| |  :  : ||    |: |||||:|::|     :| |  |: || || |: |:||
Db        4974 ACCGUCGAUGUUUACCCCUGUAAAGAGUGUUAUGUGUUCCAAAGUUGAUAAAAUAAUGGU 5033

Qy        4488 TGTTAAGAATGATAGTCTTTCTGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAA 4547
               :  : ||||:||     : :| || |:  |  : |::||||| |::||| :  :: | |
Db        5034 UCAUGAGAAUGAGUCAUUGUCAGAGGUGAACCUUCUUAAAGGAGUUAAGCUUAUUGAUAG 5093

Qy        4548 AGGGTATGTGTGCTTAGCTGATTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTG 4607
                || :| |: :| ::||| | :::||: |:  | || |||:||||  : || || || :|
Db        5094 UGGAUACGUCUGUUUAGCCGGUUUGGUCGUCACGGGCGAGUGGAACUUGCCUGACAAUUG 5153

Qy        4608 CCGTGGTGGTGTCAGTGTTTGTATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAAC 4667
               | | || ||:|: || |: :|: : |: || || || |:| ||||     | || || ||
Db        5154 CAGAGGAGGUGUGAGCGUGUGUCUGGUGGACAAAAGGAUGGAAAGAGCCGACGAGGCCAC 5213

Qy        4668 GCTGGGTGCGTATCACGCCCCTGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAA 4727
                |: ||  | :|  || |  | ||:   || || |  :::   :: ||| :  : || ||
Db        5214 UCUCGGAUCUUACUACACAGCAGCUGCAAAGAAAAGAUUUCAGUUCAAGGUCGUUCCCAA 5273

Qy        4728 TTATTCAATAACATCCGAGGATGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAA 4787
               ::|: | |:|||  || |||| ||   |||  ||   :||||||: ::||: ||:|: |
Db        5274 UUAUGCUAUAACCACCCAGGACGCGAUGAAAAACGUCUGGCAAGUUUUAGUUAAUAUUAG 5333

Qy        4788 AGGAGTGGCTATGGAAGAAGGATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGT 4847
               |   |:|   |:|  ||  || : |:|:||  : :|: :||||:: |: :|  : :|: :
Db        5334 AAAUGUGAAGAUGUCAGCGGGUUUCUGUCCGCUUUCUCUGGAGUUUGUGUCGGUGUGUAU 5393

Qy        4848 AGTACATAAAAATAATGTAAGAAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGG 4907
                |:  |:| |||:||: :|| |  |||:::||| ||    |::   |  |:|| ||||||
Db        5394 UGUUUAUAGAAAUAAUAUAAAAUUAGGUUUGAGAGAGAAGAUUACAAACGUGAGAGACGG 5453

Qy        4908 CTCGCCAATTGAACTCACTGAAAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGC 4967
                  ||| |: ||||: || ||| | |: |::|| |||::| :||| || |: || |:| |
Db        5454 AGGGCCCAUGGAACUUACAGAAGAAGUCGUUGAUGAGUUCAUGGAAGAUGUCCCUAUGUC 5513

Qy        4968 TGTGA 4972
                 : |
Db        5514 GAUCA 5518


RESULT 5
US-09-259-741-2
; Sequence 2, Application US/09259741
; Patent No. 6033895
;  GENERAL INFORMATION:
;    APPLICANT:  GARGER, STEPHEN
;    APPLICANT:  HOLTZ, R. BARRY
;    APPLICANT:  McCULLOCH, MICHAEL
;    APPLICANT:  TURPEN, THOMAS
;    TITLE OF INVENTION:  A PROCESS FOR ISOLATING AND
;    TITLE OF INVENTION:  PURIFYING VIRUSES SOLUBLE PROTEINS AND PEPTIDES FROM PLANT
;    TITLE OF INVENTION:  SOURCES
;    NUMBER OF SEQUENCES:  5
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  Howrey & Simon
;      STREET:  1299 Pennsylvania Avenue N.W.
;      CITY:  Washington
;      STATE:  DC
;      COUNTRY:  USA
;      ZIP:  20004
;    COMPUTER READABLE FORM:
;      MEDIUM TYPE:  Diskette
;      COMPUTER:  IBM Compatible
;      OPERATING SYSTEM:  DOS
;      SOFTWARE:  FastSEQ for Windows Version 2.0
;    CURRENT APPLICATION DATA:
;      APPLICATION NUMBER:  US/09/259,741
;      FILING DATE:  February 25, 1999
;      CLASSIFICATION:
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:  09/037,751
;      FILING DATE:  March 10, 1998
;    ATTORNEY/AGENT INFORMATION:
;      NAME:  Halluin, Albert P
;      REGISTRATION NUMBER:  25,277
;      REFERENCE/DOCKET NUMBER:  00801.0140.US01
;    TELECOMMUNICATION INFORMATION:
;      TELEPHONE:  650-463-8100
;      TELEFAX:  650-463-8400
;      TELEX:
;  INFORMATION FOR SEQ ID NO:  2:
;    SEQUENCE CHARACTERISTICS:
;      LENGTH:  6439 base pairs
;      TYPE:  nucleic acid
;      STRANDEDNESS:  single
;      TOPOLOGY:  unknown
;    MOLECULE TYPE:  Genomic RNA
US-09-259-741-2

  Query Match             40.9%;  Score 2034.2;  DB 3;  Length 6439;
  Best Local Similarity   44.4%;  Pred. No. 0;
  Matches 2214;  Conservative  957;  Mismatches 1793;  Indels   21;  Gaps    4;

Qy           6 AAGGTAATTCCTGAGTTTCAAAGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAA 65
               ||   | : ||  | :: |||| ||| || ::: |||| :| ||||||  :||  | ||
Db         537 AAAACAGUCCCCAACUUCCAAAAGGAAGCAUUUGACAGAUACGCAGAAAUUCCUGAAGAC 596

Qy          66 GTCTGCTGCTCTAAAACTTTTCAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGA 125
               |    |:|    || ||::: |||      |||   || |||    || |    || |||
Db         597 GCUGUCUGUCACAAUACUUUCCAGACAAUGCGACAUCAGCCGAUGCAGCAAUCAGGCAGA 656

Qy         126 AGATACGCTGTTGCTCTGCACAGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCG 185
                  :| ||  ::|| |: |||||  : :|:|| |: || |   |:|||:: || || ||
Db         657 GUGUAUGCCAUUGCGCUACACAGCAUAUAUGACAUACCAGCCGAUGAGUUCGGGGCGGCA 716

Qy         186 TTAATATCTAAGAATATACATGTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTA 245
                :  :    || ||: : ||:   :| :|:|| ||:: |   ::  | ||     :  :
Db         717 CUCUUGAGGAAAAAUGUCCAUACGUGCUAUGCCGCUUUCCACUUCUCCGAGAACCUGCUU 776

Qy         246 CTAGACCAGACGGAGGTTACGCTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGAT 305
               |: ||  |  |  | |: |   :  | ||||:   |||   :::     | || || ||
Db         777 CUUGAAGAUUCAUACGUCAAUUUGGACGAAAUCAACGCGUGUUUUUCGCGCGAUGGAGAC 836

Qy         306 GATGTTTCTTTTTTCTTTGCTGATGAAAGTACTTTAAATTATAGTCATAAATACAAAAAT 365
                |  :  | ::::  :::||    || ||:||: : ||::|: |:||:|  :|    ||:
Db         837 AAGUUGACCUUUUCUUUUGCAUCAGAGAGUACUCUUAAUUAUUGUCAUAGUUAUUCUAAU 896

Qy         366 ATCTTGCATTATGTAGTTAAATCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAG 425
               |:  :  | :|:|:    ||| |::||:: || || :|:| :|||   |:::|| : |||
Db         897 AUUCUUAAGUAUGUGUGCAAAACUUACUUCCCGGCCUCUAAUAGAGAGGUUUACAUGAAG 956

Qy         426 GAATTTTTAGTCACTAGGGTTAATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTAT 485
               || :::::||:||| || |::||:|| :||:::|:||  ::: | | | :|||:|| : :
Db         957 GAGUUUUUAGUCACCAGAGUUAAUACCUGGUUUUGUAAGUUUUCUAGAAUAGAUACUUUU 1016

Qy         486 ATTCTGTACAAGAGTGTTAGACAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATG 545
                :: :|:||||  |:|:    ||   | |    ||:||:|| |||:: :|:   || |:|
Db        1017 CUUUUGUACAAAGGUGUGGCCCAUAAAAGUGUAGAUAGUGAGCAGUUUUAUACUGCAAUG 1076

Qy         546 GAAGACGCCTTTGCTTACAAGAAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTT 605
               |||||||| :    ::|||| || ||  : || |:|: |||||  || |||    :| ::
Db        1077 GAAGACGCAUGGCAUUACAAAAAGACUCUUGCAAUGUGCAACAGCGAGAGAAUCCUCCUU 1136

Qy         606 AGAGACACGGCTTCGGTTAACTTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCG 665
```

```
Db       1137 GAGGAUUCAUCAUCAGUCAAUUACUGGUUUCCCAAAAUGAGGGAUAUGGUCAUCGUACCA 1196

Qy        666 CTGTTTGAGGGTTCTATTACCAGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGT 725

Db       1197 UUAUUCGACAUUUCUUUGGAGACUAGUAAGAGGACGCGCAAGGAAGUCUUAGUGUCCAAG 1256

Qy        726 GACTTCGTTTACACAGTGCTTAATCATATCAGAACATATCAAGCCAAAGCGTTAACTTAC 785

Db       1257 GAUUUCGUGUUUACAGUGCUUAACCACAUUCGAACAUACCAGGCGAAAGCUCUUACAUAC 1316

Qy        786 CAGAACGTATTATCTTTCGTGGAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACT 845

Db       1317 GCAAAUGUUUUGUCCCUUGUCGAAUCGAUUCGAUCGAGGGUAAUCAUUAACGGUGUGACA 1376

Qy        846 GCTAGGTCTGAATGGGATGTAGATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTC 905

Db       1377 GCGAGGUCCGAAUGGGAUGUGGACAAAUCUUUGUUACAAUCCUUGUCCAUGACGUUUUAC 1436

Qy        906 TTGCAGACTAAGCTGGCTGCGCTTCAAGACGATATAGTAATGGAAAGTTTCGGTGCTTG 965

Db       1437 CUGCAUACUAAGCUUGCCGUUCUAAAGGAUGACUUACUGAUUAGCAAGUUUAGUCUCGGU 1496

Qy        966 GATAAGACCACTTCTGAACTTATTTGGGATGAGGTGGGCAAATTTTTTGGAAACGTTTTC 1025

Db       1497 UCGAAAACGGUGUGCCAGCAUGUGUGGGAUGAGAUUUCGCUGGCGUUUGGGAACGCAUUU 1556

Qy       1026 CCCACTATCAAAGAGAGATTGGTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTG 1085

Db       1557 CCCUCCGUGAAAGAGAGACUCUUGAACAGGAAACUUAUCAGAGUGGCAGGCGACGCAUUA 1616

Qy       1086 AAGATCAAGATCCCAGATCTGTATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACC 1145

Db       1617 GAGAUCAGGGUGCCUGAUCUAUAUGUGACCUUCCACGACAGAUUAGUGACUGAGUACAAG 1676

Qy       1146 AAGTCTGAGGAGTTACCGCATCTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATG 1205

Db       1677 GCCUCUGUGGACAUGCCUGCGCUUGACAUUAGGAAGAAGAUGGAAGAAACGGAAGUGAUG 1736

Qy       1206 TACGACGCGTTATCAGAATTATCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAG 1265

Db       1737 UACAAUGCACUUUCAGAGUUAUCGGUGUUAAGGGAGUCUGACAAAUUCGAUGUUGAUGUU 1796

Qy       1266 TTCAAAGACATGTGCAAGGCTTTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTT 1325

Db       1797 UUUUCCCAGAUGUGCCAAUCUUUGGAAGUUGACCCAAUGACGGCAGCGAAGGUUAUAGUC 1856

Qy       1326 GCAGTGGCCGAGAATAGAAGCGGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAAT 1385

Db       1857 GCGGUCAUGAGCAAUGAGAGCGGUCUGACUCUCACAUUUGAACGACCUACUGAGGCGAAU 1916

Qy       1386 GTGGCTAAGGCTCT------TAAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCG 1439

Db       1917 GUUGCGCUAGCUUUACAGGAUCAAGAGAAGGCUUCAGAAGGUGCAUUGGUAGUUACCUCA 1976

Qy       1440 ACATCCGAAGAGGTGAACGTAAATAAATTTTCTATTGCTGAGAAAGGGAGATTGCCTGTG 1499

Db       1977 AGAGAAGUUGAAGAACCGUCCAUGAAGGGUUCGAUGGCCAGAGGAGAGUUACAAUUAGCU 2036

Qy       1500 TGTGCAGAAAGTCATGGTTTGACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTC 1559

Db       2037 GGUCUUGCUGGAGAUCAUCCGGAGUCGUCCUAUUCUAAGAACGAGGAGAUAGAGUCUUUA 2096

Qy       1560 AACGATTTCCATAAGGCTTGCGTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTC 1619

Db       2097 GAGCAGUUUCAUAUGGCGACGGCAGAUUCGUUAAUUCGUAAGCAGAUGAGCUCGAUUGUG 2156

Qy       1620 TACACTGGCTCACTCAAAGTTCAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCG 1679

Db       2157 UACACGGGUCCGAUUAAAGUUCAGCAAAUGAAAAACUUUAUCGAUAGCCUGGUAGCAUCA 2216

Qy       1680 TTGTCCGCCACTGTATCAAATCTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCT 1739

Db       2217 CUAUCUGCUGCGGUGUCGAAUCUCGUCAAGAUCCUCAAAGAUACAGCUGCUAUUGACCUU 2276

Qy       1740 GATTCCAGGGAGAAAGTTGGTGTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCT 1799

Db       2277 GAAACCCGUCAAAAGUUUGGAGUCUUGGAUGUUGCAUCUAGGAAGUGGUUAAUCAAACCA 2336

Qy       1800 GCGGCCAAAGGTCATTCATGGGGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCA 1859

Db       2337 ACGGCCAAGAGUCAUGCAUGGGGUGUUGUUGAAACCCACGCGAGGAAGUAUCAUGUGGCG 2396

Qy       1860 CTTCTATCTTATGAAGGAGATAGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTA 1919

Db       2397 CUUUUGGAAUAUGAUGAGCAGGGUGUGGUGACAUGCGAUGAUUGGAGAAGAGUAGCUGUU 2456

Qy       1920 TCATCTGATACAATGGTATATTCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATG 1979

Db       2457 AGCUCUGAGUCUGUUGUUUAUUCCGACAUGGCGAAACUCAGAACUCUGCGCAGACUGCUU 2516

Qy       1980 AGAGACGGTGAACCCCACGAACCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGT 2039

Db       2517 CGAAACGGAGAACCGCAUGUCAGUAGCGCAAAGGUUGUUCUUGUGGACGGAGUUCCGGGC 2576

Qy       2040 TGTGGAAAGTACAAAGGAGATTTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTT 2099

Db       2577 UGUGGAAAAACCAAAGAAAUUCUUUCCAGGGUUAAUUUUGAUGAAGAUCUAAUUUUAGUA 2636

Qy       2100 CCTGGAAAACAAGCTGCTGCTATGATCAGAAGAAGGGCTAATTCATCTGGACTGATAAGA 2159

Db       2637 CCUGGGAAGCAAGCCGCGGAAAUGAUCAGAAGACGUGCGAAUUCCUCAGGGAUUAUUGUG 2696

Qy       2160 GCCACAATGGACAATGTGAGAACGGTAGATTCACTTCTAATGCAT---------CCAAAA 2210

Db       2697 GCCACGAAGGACAACGUUAAAACCGUUGAUUCUUUCAUGAUGAAUUUUGGAAAAGCACA 2756

Qy       2211 CCGCGATCACACAAGAGGCTTTTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTT 2270

Db       2757 CGCUGUCAGUUCAAGAGGUUAUUCAUUGAUGAAGGGUUGAUGUUGCAUACUGGUUGUGUU 2816

Qy       2271 AACTTCCTGGTGCTTATCTCTGGTTGCGACATCGCATACATTTACGGAGATACACAGCAG 2330

Db       2817 AAUUUUCUUGUGGCGAUGUCAUUGUGCGAAAUUGCAUAUGUUUACGGAGACACACAGCAG 2876

Qy       2331 ATTCCTTTCATTAACAGAGTTCAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAA 2390

Db       2877 AUUCCAUACAUCAAUAGAGUUUCAGGAUUCCCGUACCCCGCCCAUUUUGCCAAAUUGGAA 2936

Qy       2391 GTGGATGAAGTTGAGATGAGGAGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTC 2450

Db       2937 GUUGACGAGGUGGAGACACGCAGAACUACUCUCCGUUGUCCAGCCGAUGUCACACAUUAU 2996

Qy       2451 CTACAATCGAAGTACGAAGGAGCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCA 2510

Db       2997 CUGAACAGGAGAUAUGAGGGCUUUGUCAUGAGCACUUCUUCGGUUAAAAAGUCUGUUUCG 3056

Qy       2511 TCTGAGATGATAGGCGGTAAGGGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGGAAA 2570

Db       3057 CAGGAGAUGGUCGGCGGAGCCGCCGUGAUCAAUCCGAUCUCAAAACCCUUGCAUGGCAAG 3116

Qy       2571 ATTGTAACTTTCACTCAGGCTGATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTG 2630

Db       3117 AUCCUGACUUUUACCCAAUCGGAUAAAGAAGCUCUGCUUUCAAGAGGGUAUUCAGAUGUU 3176

Qy       2631 AACACCGTTCATGAGATCCAAGGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACG 2690

Db       3177 CACACUGUGCAUGAAGUGCAAGGCGAGACAUACUCUGAUGUUUCACUAGUUAGGUUAACC 3236

Qy       2691 GCAACTCCACTGACTCTGATTTCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGA 2750

Db       3237 CCUACACCAGUCUCCAUCAUUGCAGGAGACAGCCCACAUGUUUUGGUCGCAUUGUCAAGG 3296

Qy       2751 CACACAAAGAGCTTCAAATATTACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGT 2810

Db       3297 CACACCUGUUCGCUCAAGUACUACACUGUUGUUAUGGAUCCUUUAGUUAGUAUCAUUAGA 3356
```

```
Qy       2811 GATTTGTCTTCTTTAAGCTCCTTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGA 2870
              ||: :        : |||:| : | : ::||| |:|:|:| ||: || ||||| |    |
Db       3357 GAUCUAGAGAAACUUAGCUCGUACUUGUUAGAUAUGUAUAAGGUCGAUGCAGGAACACAA 3416

Qy       2871 TAGCAATTACAGATGGATGCAGTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAA 2930
              :|||||::|||||: ||  | |:|::||||||:   ||:|: :::|: ||| | || ||
Db       3417 UAGCAAUUACAGAUUGACUCGGUGUUCAAAGGUUCCAAUCUUUUUGUUGCAGCGCCAAAG 3476

Qy       2931 TCAGGAGACTTTCCAGATCTACAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACT 2990
               | || ||  :: | ||: : |||:: :| :| ||:   :| |:||| || || || ||
Db       3477 ACUGGUGAUAUUUCUGAUAUGCAGUUUUACUAUGAUAAGUGUCUCCCAGGCAACAGCACC 3536

Qy       2991 ATACTTAACAAGTATGATGCTGTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAG 3050
              |:  : || || : :||:||:|::||||:||||::   :|| | :    : ||:|: ||
Db       3537 AUGAUGAAUAAUUUUGAUGCUGUUACCAUGAGGUUGACUGACAUUUCAUUGAAUGUCAAA 3596

Qy       3051 GATTGTGTTCTTGATTTTTCCAAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTA 3110
              ||::|  :  : ||: : :| ||   : ::|    ||| |||||    |    |   |:|
Db       3597 GAUUGCAUAUUGGAUAUGUCUAAGUCUGUUCGUGCGCCUAAGGAUCAAAUCAAACCACUA 3656

Qy       3111 GAGCCAGTTTTGCGTACCGCGGCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTG 3170
                 ||  :  : || || ||||| |||  |||| |     | ||||:| : |||||: :
Db       3657 AUACCUAUGGUACGAACGGCGGCAGAAAUGCCACGCCAGACUGGACUAUUGGAAAAUUUA 3716

Qy       3171 GTTGCAATGATTAAAAGAAATTTCAACGCACCAGACCTGACGGGGACGATTGACATTGAG 3230
              |: || |:||::|||||||| :: |||||||| ||  :| | || |  |::|| |::||
Db       3717 GUGGCGAUGAUUAAAAGAAACUUUAACGCACCCGAGUUGUCUGGCAUCAUUGAUAUUGAA 3776

Qy       3231 AGCACCGCATCTGTTGTAGTAGATAAGTTTTTTGATAGCTATTTTATTAAAAAAGAAAAA 3290
              |  || |||:|: : |: |:|||:|||::::::||:|| :|:::  ::||| || ||| |
Db       3777 AAUACUGCAUCUUUGGUUGUAGAUAAGUUUUUUGAUAGUUAUUUGCUUAAAGAAAAAAGA 3836

Qy       3291 TACACAAAAAATATTGCTGGAGTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAAC 3350
               |  |||| || | :| :    :| : |  |  || :|  : |  |||:||:: |||||
Db       3837 AAACCAAAUAAAAAUGUUUCUUUGUUCAGUAGAGAGUCUCUCAAUAGAUGGUUAGAAAAG 3896

Qy       3351 AGGAAAGAAGTACTATTGGACGACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATC 3410
                | || | |:|  | : | | |  : ||  | :   |::::   ||: :||| ||  :
Db       3897 CAGGAACAGGUAACAAUAGGCCAGCUCGCAGAUUUUGAUUUUGUGGAUUUGCCAGCAGUU 3956

Qy       3411 GATCAGTACAAGCACATGATCAAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAG 3470
              ||:|||:|||  ||||:||: || || |||||| ||||| || ::||||  ::|||: ||
Db       3957 GAUCAGUACAGACACAUGAUUAAAGCACAACCCAAACAAAAGUUGGACACUUCAAUCCAA 4016

Qy       3471 AATGAATACCCTGCTCTGCAAACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTG 3530
              |  || :|||| ||: :||| || |::|: :||||::| ||  |||:||| |  |: ::
Db       4017 ACGGAGUACCCGGCUUUGCAGACGAUUGUGUACCAUUCAAAAAAGAUCAAUGCAAUAUUC 4076

Qy       3531 GCCGGTTTCT---CAGAGCTTACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTT 3587
              | |   :: :     ||||::|| |||    : |: ||     ::||::| |  |  :::
Db       4077 GGCCCGUUGUUUAGUGAGCUUACUAGGCAAUUACUGGACAGUGUUGAUUCGAGCAGAUUU 4136

Qy       3588 CTTTTCTTTACTAGGAAAACTCCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCG 3647
               : :: :: || || || || ||||  ||||:: | || :: ::|   ||:|:||||
Db       4137 UUGUUUUUCACAAGAAAGACACCAGCGCAGAUUGAGGAUUUCUUCGGAGAUCUCGACAGU 4196

Qy       3648 CACGTTCCTATGGATGTGTTAGAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAG 3707
              || |: || |:|||:|: :: || |:|||:|: :| || :| || || :| ||||| ||
Db       4197 CAUGUGCCGAUGGAUGUCUUGGAGCUGGAUAUAUCAAAAUACGACAAAUCUCAGAAUGAA 4256

Qy       3708 TTTCATTGTGCTGTAGAGTATGAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCC 3767
              :: || :|:|| |:||| :| || |: :||  ||||::|||: :  | || :: ::||
Db       4257 UUCCACUGUGCAGUAGAAUACGAGAUCUGGCGAAGAUUGGGUUUUGAAGACUUCUUGGGA 4316

Qy       3768 GAAGTGTGGAAACAAGGGCACAGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAG 3827
              ||||: :|||||||||||||| || || ||||  : |||||::| |  || || |: ||
Db       4317 GAAGUUUGGAAACAAGGGCAUAGAAAGACCACCCUCAAGGAUUAUACCGCAGGUAUAAAA 4376

Qy       3828 ACATGTCTGTGGTATCAAAGGAAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTT 3887
              || :|  : :||:|:||||| || ||||| || |: || || ::||: || || ||:|:
Db       4377 ACUUGCAUCUGGUAUCAAAGAAAGAGCGGGGACGUCACGACGUUCAUUGGAAACACUGUG 4436

Qy       3888 ATAATAGCAGCTTGCTTGGGTTCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTT 3947
              |: |: || || :| ::||  :| |:| : ||||:||| ||  : |: ||||| || :::
Db       4437 AUCAUUGCUGCAUGUUUGGCCUCGAUGCUUCCGAUGGAGAAAAUAAUCAAAGGAGCCUUU 4496

Qy       3948 TGTGGAGACGATTCCGTTTTGTATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCA 4007
              :| || |||||:    :  :|:| :::||||||||::  || :: || ||  : ||
Db       4497 UGCGGUGACGAUAGUCUGCUGUACUUUCCAAAGGGUUGUGAGUUUCCGGAUGUGCAACAC 4556

Qy       4008 TGTGCTAATCTCATGTGGAATTTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTT 4067
              :  || ||:|: |:|:||||::::|| || ||||:|: :| |||   |:| || :||:::
Db       4557 UCCGCGAAUCUUAUGUGGAAUUUUGAAGCAAAACUGUUUAAAAAACAGUAUGGAUACUUU 4616

Qy       4068 TGTGGTAGATACATCATACACCATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAG 4127
              :| || |||:|  : |:||| || || |  |||   |: |:|:|::| ||:||  : |||
Db       4617 UGCGGAAGAUAUGUAAUACAUCACGACAGAGGAUGCAUUGUGUAUUACGAUCCCCUAAAG 4676

Qy       4128 TTGATCTCCAAACTTGGGGCAAAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGG 4187
              ::||:|:| ||||::|| || ||||| |:||||||::  || |||:: || |||:: ||
Db       4677 UUGAUCUCGAAACUUGGUGCUAAACACAUCAAGGAUUGGGAACACUUGGAGGAGUUCAGA 4736

Qy       4188 GTGTCTTTGTGCGATGTTGCTTGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTG 4247
                |:|: : :| ||:|::||:  ::|| :    |||   :|       :   | ||| :|
Db       4737 AGGUCUCUUUGUGAUGUUGCUGUUUCGUU---GAACAAUUGUGCGUAUUACACACAGUUG 4793

Qy       4248 AACGCAGCTATCAAGGAGGTTCATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGT 4307
               |||  ||: :   |||||::||:|| |||||   :   ||::||:::| :: :||  |:
Db       4794 GACGACGCUGUAUGGGAGGUUCAUAAGACCGCCCCUCCAGGUUCGUUUGUUUAUAAAAGU 4853

Qy       4308 GTTAACAAATTTTTGTGTGATAAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAG 4367
               :    || : :::|: :||:||| :: : :::|||| :::|::: :| |:|||: :
Db       4854 CUGGUGAAGUAUUUGUCUGAUAAAGUUCUUUUUAGAAGUUUGUUUAUAGAUGGCUCUAGU 4913

Qy       4368 TCTCAGAGATACTGTCAAAATTAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACT 4427
              : : | ||  |  |: || |: |  |||:: |: || |: :| |||  |||  |||:  :
Db       4914 UGUUAAAGGAAAAGUGAAUAUCAAUGAGUUUAUCGACCUGUCAAAAAUGGAGAAGAUCUU 4973

Qy       4428 TCCGGCATTCATGACTAAGGTCAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGC 4487
               ||| |  :  : ||    |: |||||:|::|     :| |  |: || || |: |:||
Db       4974 ACCGUCGAUGUUUACCCCUGUAAAGAGUGUUAUGUGUUCCAAAGUUGAUAAAAUAAUGGU 5033

Qy       4488 TGTTAAGAATGATAGTCTTTCTGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAA 4547
              :  : ||||:||     : :| || |:  |  : |::||||| |::||| :  :: | |
Db       5034 UCAUGAGAAUGAGUCAUUGUCAGAGGUGAACCUUCUUAAAGGAGUUAAGCUUAUUGAUAG 5093

Qy       4548 AGGGTATGTGTGCTTAGCTGATTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTG 4607
               || :| |: :| ::||| | :::||: |:  | || |||:||||  : || || || :|
Db       5094 UGGAUACGUCUGUUUAGCCGGUUUGGUCGUCACGGGCGAGUGGAACUUGCCUGACAAUUG 5153

Qy       4608 CCGTGGTGGTGTCAGTGTTTGTATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAAC 4667
              | | || ||:|: || |: :|: : |: || || || |:| ||||     | || || ||
Db       5154 CAGAGGAGGUGUGAGCGUGUGUCUGGUGGACAAAAGGAUGGAAAGAGCCGACGAGGCCAC 5213

Qy       4668 GCTGGGTGCGTATCACGCCCCTGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAA 4727
               |: ||  | :|  || |  | ||:   || || |  :::   :: ||| :  : || ||
Db       5214 UCUCGGAUCUUACUACACAGCAGCUGCAAAGAAAAGAUUUCAGUUCAAGGUCGUUCCCAA 5273

Qy       4728 TTATTCAATAACATCCGAGGATGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAA 4787
              ::|: | |:|||  || ||||| ||   |||  ||   :||||||: ::||: ||:|: |
Db       5274 UUAUGCUAUAACCACCCAGGACGCGAUGAAAAACGUCUGGCAAGUUUUAGUUAAUAUUAG 5333

Qy       4788 AGGAGTGGCTATGGAAGAAGGATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGT 4847
              |   |:|   |:|  ||  || : |:|:||  : :|: :||||:: |: :|  : :|: :
Db       5334 AAAUGUGAAGAUGUCAGCGGGUUUCUGUCCGCUUUCUCUGGAGUUUGUGUCGGUGUGUAU 5393

Qy       4848 AGTACATAAAAATAATGTAAGAAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGG 4907
               |:  |:| |||:||: :|| |  |||:::||| ||    |::   |  |:|| ||||||
Db       5394 UGUUUAUAGAAAUAAUAUAAAAUUAGGUUUGAGAGAGAAGAUUACAAACGUGAGAGACGG 5453

Qy       4908 CTCGCCAATTGAACTCACTGAAAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGC 4967
                 ||| |: ||||: || ||| | |: |::|| |||::| :||| || |: || |:| |
Db       5454 AGGGCCCAUGGAACUUACAGAAGAAGUCGUUGAUGAGUUCAUGGAAGAUGUCCCUAUGUC 5513

Qy       4968 TGTGA 4972
```

```
                  : |
Db         5514 GAUCA 5518


RESULT 6
US-09-037-751-2
; Sequence 2, Application US/09037751
; Patent No. 6037456
;  GENERAL INFORMATION:
;    APPLICANT:  GARGER, STEPHEN
;    APPLICANT:  HOLTZ, R. BARRY
;    APPLICANT:  McCULLOCH, MICHAEL
;    APPLICANT:  TURPEN, THOMAS
;    TITLE OF INVENTION:  A PROCESS FOR ISOLATING AND
;    TITLE OF INVENTION:  PURIFYING VIRUSES SOLUBLE PROTEINS AND PEPTIDES
;    TITLE OF INVENTION:  FROM PLANT SOURCES
;    NUMBER OF SEQUENCES:  5
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  Howrey & Simon
;      STREET:  1299 Pennsylvania Avenue N.W.
;      CITY:  Washington
;      STATE:  DC
;      COUNTRY:  USA
;      ZIP:  20004
;    COMPUTER READABLE FORM:
;      MEDIUM TYPE:  Diskette
;      COMPUTER:  IBM Compatible
;      OPERATING SYSTEM:  DOS
;      SOFTWARE:  FastSEQ for Windows Version 2.0
;    CURRENT APPLICATION DATA:
;      APPLICATION NUMBER:  US/09/037,751
;      FILING DATE:  10-MAR-1998
;      CLASSIFICATION:
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:
;      FILING DATE:
;    ATTORNEY/AGENT INFORMATION:
;      NAME:  Halluin, Albert P
;      REGISTRATION NUMBER:  25,277
;      REFERENCE/DOCKET NUMBER:  00801.0140.999
;    TELECOMMUNICATION INFORMATION:
;      TELEPHONE:  650-463-8109
;      TELEFAX:  650-463-8400
;      TELEX:
;  INFORMATION FOR SEQ ID NO:  2:
;    SEQUENCE CHARACTERISTICS:
;      LENGTH:  6439 base pairs
;      TYPE:  nucleic acid
;      STRANDEDNESS:  single
;      TOPOLOGY:  unknown
;    MOLECULE TYPE:  Genomic RNA
US-09-037-751-2

  Query Match             40.9%;  Score 2034.2;  DB 3;  Length 6439;
  Best Local Similarity   44.4%;  Pred. No. 0;
  Matches 2214;  Conservative  957;  Mismatches 1793;  Indels   21;  Gaps    4;

Qy            6 AAGGTAATTCCTGAGTTTCAAAGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAA 65
                ||   | : ||  | :: |||| ||| || ::: |||| :| ||||||  :||  | ||
Db          537 AAAACAGUCCCCAACUUCCAAAAGGAAGCAUUUGACAGAUACGCAGAAAUUCCUGAAGAC 596

Qy           66 GTCTGCTGCTCTAAAACTTTTCAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGA 125
                |    |:|    || ||::: |||      |||   || |||    || |    || |||
Db          597 GCUGUCUGUCACAAUACUUUCCAGACAAUGCGACAUCAGCCGAUGCAGCAAUCAGGCAGA 656

Qy          126 AGATACGCTGTTGCTCTGCACAGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCG 185
                   :| ||  ::|| |: |||||  : :|:|| |: || |   |:|||:: || || ||
Db          657 GUGUAUGCCAUUGCGCUACACAGCAUAUAUGACAUACCAGCCGAUGAGUUCGGGGCGGCA 716

Qy          186 TTAATATCTAAGAATATACATGTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTA 245
                 :  :    || ||: : ||:   :| :|:|| ||:: |   ::  | ||     :  :
Db          717 CUCUUGAGGAAAAAUGUCCAUACGUGCUAUGCCGCUUUCCACUUCUCCGAGAACCUGCUU 776

Qy          246 CTAGACCAGACGGAGGTTACGCTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGAT 305
                |: ||  |  |  | |: |   :  | ||||:   |||   :::     | || || ||
Db          777 CUUGAAGAUUCAUACGUCAAUUUGGACGAAAUCAACGCGUGUUUUUCGCGCGAUGGAGAC 836

Qy          306 GATGTTTCTTTTTCTTTGCTGATGAAAGTACTTTAAATTATAGTCATAAATACAAAAAT 365
                 |  :  | ::::  :::||    ||||:||:  : ||::|: |:||:|  :|    ||:
Db          837 AAGUUGACCUUUUCUUUUGCAUCAGAGAGUACUCUUAAUUAUUGUCAUAGUUAUUCUAAU 896

Qy          366 ATCTTGCATTATGTAGTTAAATCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAG 425
                |:  :  | :|:|:    ||| |::||:: || || :|:| :|||   |:::|| : |||
Db          897 AUUCUUAAGUAUGUGUGCAAAACUUACUUCCCGGCCUCUAAUAGAGAGGUUUACAUGAAG 956

Qy          426 GAATTTTTAGTCACTAGGGTTAATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTAT 485
                || :::::||:||| || |::||:|| :||::::|:|| ::: | | | :|||:|| : :
Db          957 GAGUUUUUAGUCACCAGAGUUAAUACCUGGUUUUGUAAGUUUUCUAGAAUAGAUACUUUU 1016

Qy          486 ATTCTGTACAAGAGTGTTAGACAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATG 545
                 :: :|:||||  |:|:    ||   | |    ||:||:|| |||:: :|:   || |:|
Db         1017 CUUUUGUACAAAGGUGUGGCCCAUAAAAGUGUAGAUAGUGAGCAGUUUUAUACUGCAAUG 1076

Qy          546 GAAGACGCCTTTGCTTACAAGAAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTT 605
                |||||||| :    ::|||| || ||  : || |:|: |||||  || |||    :| ::
Db         1077 GAAGACGCAUGGCAUUACAAAAAGACUCUUGCAAUGUGCAACAGCGAGAGAAUCCUCCUU 1136

Qy          606 AGAGACACGGCTTCGGTTAACTTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCG 665
                   ||  |  | :| |: || :  :||:: || || |:|| ||| |:||: |: |:|||
Db         1137 GAGGAUUCAUCAUCAGUCAAUUACUGGUUUCCCAAAAUGAGGGAUAUGGUCAUCGUACCA 1196

Qy          666 CTGTTTGAGGGTTCTATTACCAGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGT 725
                 : ::  ||   ::|: :    |  |  |||| |||  | |  || |:| : |:
Db         1197 UUAUUCGACAUUUCUUUGGAGACUAGUAAGAGGACGCGCAAGGAAGUCUUAGUGUCCAAG 1256

Qy          726 GACTTCGTTTACACAGTGCTTAATCATATCAGAACATATCAAGCCAAAGCGTTAACTTAC 785
                || ::||: :  ||||:||::|| || |:  |||||:| || || |||||  : || :||
Db         1257 GAUUUCGUGUUUACAGUGCUUAACCACAUUCGAACAUACCAGGCGAAAGCUCUUACAUAC 1316

Qy          786 CAGAACGTATTATCTTTCGTGGAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACT 845
                   || |: :: :|  : |: || :| |:  ||:|  | |: |: |: || ||:|: ||
Db         1317 GCAAAUGUUUUGUCCCUUGUCGAAUCGAUUCGAUCGAGGGUAAUCAUUAACGGUGUGACA 1376

Qy          846 GCTAGGTCTGAATGGGATGTAGATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTC 905
                || |||:| |||:||||:|: || ||| |  :  : ||| ||::|:| |:||| :: : |
Db         1377 GCGAGGUCCGAAUGGGAUGUGGACAAAUCUUUGUUACAAUCCUUGUCCAUGACGUUUUAC 1436

Qy          906 TTGCAGACTAAGCTGGCTGCGCTTCAAGACGATATAGTAATGGGAAAGTTTCGGTGCTTG 965
                 :||| ||:||||: || |  |:  | || ||  :| : |:  | |||::: |   |
Db         1437 CUGCAUACUAAGCUUGCCGUUCUAAAGGAUGACUUACUGAUUAGCAAGUUUAGUCUCGGU 1496

Qy          966 GATAAGACCACTTCTGAACTTATTTGGGATGAGGTGGGCAAATTTTTTGGAAACGTTTTC 1025
                   || ||    :   | | : : :||||:||| :          :::|| ||||  ::
Db         1497 UCGAAAACGGUGUGCCAGCAUGUGUGGGAUGAGAUUUCGCUGGCGUUUGGGAACGCAUUU 1556

Qy         1026 CCCACTATCAAAGAGAGATTGGTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTG 1085
                ||| |  : ||||||||| :  :|| ||||||| :: :    |:    |   | ||  :
Db         1557 CCCUCCGUGAAAGAGAGACUCUUGAACAGGAAACUUAUCAGAGUGGCAGGCGACGCAUUA 1616

Qy         1086 AAGATCAAGATCCCAGATCTGTATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACC 1145
                 |||:|| | : || ||:|: :|:|: || :   | ||||| :: |:  |:|| :|||
Db         1617 GAGAUCAGGGUGCCUGAUCUAUAUGUGACCUUCCACGACAGAUUAGUGACUGAGUACAAG 1676

Qy         1146 AAGTCTGAGGAGTTACCGCATCTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATG 1205
                   :|:| |||  : ||    |: || |: | |||| |  : |||||| | ||    |:|
Db         1677 GCCUCUGUGGACAUGCCUGCGCUUGACAUUAGGAAGAAGAUGGAAGAAACGGAAGUGAUG 1736

Qy         1206 TACGACGCGTTATCAGAATTATCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAG 1265
                :|| | ||  : :|||| ::|:|  :  : | ||   |:|| || ::|||: : |
Db         1737 UACAAUGCACUUUCAGAGUUAUCGGUGUUAAGGGAGUCUGACAAAUUCGAUGUUGAUGUU 1796

Qy         1266 TTCAAAGACATGTGCAAGGCTTTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTT 1325
                ::     | |:|:|| |  |::: || |::   ||      ||||||    |: |: |:
Db         1797 UUUUCCCAGAUGUGCCAAUCUUUGGAAGUUGACCCAAUGACGGCAGCGAAGGUUAUAGUC 1856

Qy         1326 GCAGTGGCCGAGAATAGAAGCGGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAAT 1385
```

```
              || |:       ||:   |||||: : ||:|: || :::||    || || |||| |||:
Db       1857 GCGGUCAUGAGCAAUGAGAGCGGUCUGACUCUCACAUUUGAACGACCUACUGAGGCGAAU 1916

Qy       1386 GTGGCTAAGGCTCT------TAAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCG 1439
              |: ||    ||: :      : ||   | ||| :| || |  |   :     ::    |
Db       1917 GUUGCGCUAGCUUUACAGGAUCAAGAGAAGGCUUCAGAAGGUGCAUUGGUAGUUACCUCA 1976

Qy       1440 ACATCCGAAGAGGTGAACGTAAATAAATTTTCTATTGCTGAGAAAGGGAGATTGCCTGTG 1499
              | |   |  || |        |  ||   ::| |: ||      || |  |      |
Db       1977 AGAGAAGUUGAAGAACCGUCCAUGAAGGGUUCGAUGGCCAGAGGAGAGUUACAAUUAGCU 2036

Qy       1500 TGTGCAGAAAGTCATGGTTTGACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTC 1559
               |:   |   |  |:  :  |  |    |  | :   || || ||||| : |||:|  :
Db       2037 GGUCUUGCUGGAGAUCAUCCGGAGUCGUCCUAUUCUAAGAACGAGGAGAUAGAGUCUUUA 2096

Qy       1560 AACGATTTCCATAAGGCTTGCGTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTC 1619
               |  | :: ||:| |||    |  ||:    : |::   ||||| |:|   :|| ::|:
Db       2097 GAGCAGUUUCAUAUGGCGACGGCAGAUUCGUUAAUUCGUAAGCAGAUGAGCUCGAUUGUG 2156

Qy       1620 TACACTGGCTCACTCAAAGTTCAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCG 1679
              :|||| ||  |  : ||||::|| ||||:||| |||: : : || ||  :|| ||| :|
Db       2157 UACACGGGUCCGAUUAAAGUUCAGCAAAUGAAAAACUUUAUCGAUAGCCUGGUAGCAUCA 2216

Qy       1680 TTGTCCGCCACTGTATCAAATCTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCT 1739
               : :| ||  | |: :| ||:|:   ||||   |: || ||: ||   |    :||   :
Db       2217 CUAUCUGCUGCGGUGUCGAAUCUCGUCAAGAUCCUCAAAGAUACAGCUGCUAUUGACCUU 2276

Qy       1740 GATTCCAGGGAGAAAGTTGGTGTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCT 1799
              ||  || |  | ||  ::|| |: : |||:|:  | :  |  |||:|| :  :||||||
Db       2277 GAAACCCGUCAAAAGUUUGGAGUCUUGGAUGUUGCAUCUAGGAAGUGGUUAAUCAAACCA 2336

Qy       1800 GCGGCCAAAGGTCATTCATGGGGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCA 1859
               |||||||  |:||: ||:|||| |::|:        ||  | ||||      :   ||
Db       2337 ACGGCCAAGAGUCAUGCAUGGGGUGUUGUUGAAACCCACGCGAGGAAGUAUCAUGUGGCG 2396

Qy       1860 CTTCTATCTTATGAAGGAGATAGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTA 1919
              |:: :    :|:|| |   |  |  :||:|||       || :|||| || |: ||:|:
Db       2397 CUUUUGGAAUAUGAUGAGCAGGGUGUGGUGACAUGCGAUGAUUGGAGAAGAGUAGCUGUU 2456

Qy       1920 TCATCTGATACAATGGTATATTCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATG 1979
                 :|:||  |  : |: :|::| || |: || || |:|  || :|:| | | |    :
Db       2457 AGCUCUGAGUCUGUUGUUUAUUCCGACAUGGCGAAACUCAGAACUCUGCGCAGACUGCUU 2516

Qy       1980 AGAGACGGTGAACCCCACGAACCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGT 2039
               || |||| ||||| || |    :|  |||||| : |: |::|:||| || |: || ||
Db       2517 CGAAACGGAGAACCGCAUGUCAGUAGCGCAAAGGUUGUUCUUGUGGACGGAGUUCCGGGC 2576

Qy       2040 TGTGGAAAGTACAAAGGAGATTTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTT 2099
              :|:|||||   ||||| |  : ::   ||  :: |: ::||:|| ||: : |: :: |:
Db       2577 UGUGGAAAAACCAAAGAAAUUCUUUCCAGGGUUAAUUUUGAUGAAGAUCUAAUUUUAGUA 2636

Qy       2100 CCTGGAAAACAAGCTGCTGCTATGATCAGAAGAAGGGCTAATTCATCTGGACTGATAAGA 2159
              ||:|| || ||||| || |  |:||:||||||| | || ||::| :| ||   : |:
Db       2637 CCUGGGAAGCAAGCCGCGGAAAUGAUCAGAAGACGUGCGAAUUCCUCAGGGAUUAUUGUG 2696

Qy       2160 GCCACAATGGACAATGTGAGAACGGTAGATTCACTTCTAATGCAT---------CCAAAA 2210
              ||||| | |||||| |: | ||| |: ||::|  :  : |:| |:            | |
Db       2697 GCCACGAAGGACAACGUUAAAACCGUUGAUUCUUUCAUGAUGAAUUUUGGGAAAAGCACA 2756

Qy       2211 CCGCGATCACACAAGAGGCTTTTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTT 2270
              |   |      ||||||| : :: |::||:|||||::||:|  :||| || ||::|:|::
Db       2757 CGCUGUCAGUUCAAGAGGUUAUUCAUUGAUGAAGGGUUGAUGUUGCAUACUGGUUGUGUU 2816

Qy       2271 AACTTCCTGGTGCTTATCTCTGGTTGCGACATCGCATACATTTACGGAGATACACAGCAG 2330
              || :: |: |:|   |: :|    :|||| |: |||:|  :::||||||| |||||||||
Db       2817 AAUUUUCUUGUGGCGAUGUCAUUGUGCGAAAUUGCAUAUGUUUACGGAGACACACAGCAG 2876

Qy       2331 ATTCCTTTCATTAACAGAGTTCAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAA 2390
              |::|| : ||: || ||||::      ::||||:| |||   ||::::|  ||  :| ||
Db       2877 AUUCCAUACAUCAAUAGAGUUUCAGGAUUCCCGUACCCCGCCCAUUUUGCCAAAUUGGAA 2936

Qy       2391 GTGGATGAAGTTGAGATGAGGAGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTC 2450
              |: || || |: ||||   | || || || |:  | :| ||||  ||:|: |    ::
Db       2937 GUUGACGAGGUGGAGACACGCAGAACUACUCUCCGUUGUCCAGCCGAUGUCACACAUUAU 2996

Qy       2451 CTACAATCGAAGTACGAAGGAGCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCA 2510
              |:  |   ||  :| || ||    |: |  | |||::|  | |:  ||   :| |: :|
Db       2997 CUGAACAGGAGAUAUGAGGGCUUUGUCAUGAGCACUUCUUCGGUUAAAAAGUCUGUUUCG 3056

Qy       2511 TCTGAGATGATAGGCGGTAAGGGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGGAAA 2570
                 ||||:| : |||||    |  |:  : ||     : :| |||||  :  | || ||
Db       3057 CAGGAGAUGGUCGGCGGAGCCGCCGUGAUCAAUCCGAUCUCAAAACCCUUGCAUGGCAAG 3116

Qy       2571 ATTGTAACTTTCACTCAGGCTGATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTG 2630
              |:  : ||::: || ||  | ||:|||   |   :       |  || :|:    |:|:
Db       3117 AUCCUGACUUUUACCCAAUCGGAUAAAGAAGCUCUGCUUUCAAGAGGGUAUUCAGAUGUU 3176

Qy       2631 AACACCGTTCATGAGATCCAAGGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACG 2690
               |||| |: ||:||  : ||||| || || :     ||:|: :| |: |: || :: ||
Db       3177 CACACUGUGCAUGAAGUGCAAGGCGAGACAUACUCUGAUGUUUCACUAGUUAGGUUAACC 3236

Qy       2691 GCAACTCCACTGACTCTGATTTCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGA 2750
               | || ||| :  |  : |:: |         ||| ||:|:: : |:|||  :| | ||
Db       3237 CCUACACCAGUCUCCAUCAUUGCAGGAGACAGCCCACAUGUUUUGGUCGCAUUGUCAAGG 3296

Qy       2751 CACACAAAGAGCTTCAAATATTACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGT 2810
              |||||        :||| :| :|||| |: |:  : ||:||:::||:    |: |::||
Db       3297 CACACCUGUUCGCUCAAGUACUACACUGUUGUUAUGGAUCCUUUAGUUAGUAUCAUUAGA 3356

Qy       2811 GATTTGTCTTCTTTAAGCTCCTTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGA 2870
              ||: :        : |||:| : | : ::||| |:|:|:| ||: || ||||| |    |
Db       3357 GAUCUAGAGAAACUUAGCUCGUACUUGUUAGAUAUGUAUAAGGUCGAUGCAGGAACACAA 3416

Qy       2871 TAGCAATTACAGATGGATGCAGTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAA 2930
              :|||||::|||||: ||  | |:|::||||||:   ||:|: :::|: ||| | || ||
Db       3417 UAGCAAUUACAGAUUGACUCGGUGUUCAAAGGUUCCAAUCUUUUUGUUGCAGCGCCAAAG 3476

Qy       2931 TCAGGAGACTTTCCAGATCTACAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACT 2990
               | || ||  :: | ||: : |||:: :| :| ||:   :| |:||| || || || ||
Db       3477 ACUGGUGAUAUUUCUGAUAUGCAGUUUUACUAUGAUAAGUGUCUCCCAGGCAACAGCACC 3536

Qy       2991 ATACTTAACAAGTATGATGCTGTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAG 3050
              |:  : || || : :||:||:|::||||:||||::   :|| | :    : ||:|: ||
Db       3537 AUGAUGAAUAAUUUUGAUGCUGUUACCAUGAGGUUGACUGACAUUUCAUUGAAUGUCAAA 3596

Qy       3051 GATTGTGTTCTTGATTTTTCCAAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTA 3110
              ||::|  :  : ||: : :| ||   : ::|    ||| |||||    |    |   |:|
Db       3597 GAUUGCAUAUUGGAUAUGUCUAAGUCUGUUCGUGCGCCUAAGGAUCAAAUCAAACCACUA 3656

Qy       3111 GAGCCAGTTTTGCGTACCGCGGCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTG 3170
                 ||  :  : || || ||||| |||  |||| |     | ||||:| : |||||: :
Db       3657 AUACCUAUGGUACGAACGGCGGCAGAAAUGCCACGCCAGACUGGACUAUUGGAAAAUUUA 3716

Qy       3171 GTTGCAATGATTAAAAGAAATTTCAACGCACCAGACCTGACGGGGACGATTGACATTGAG 3230
              |: || |:||::|||||||| :: |||||||| ||  :| | || |  |::|| |::||
Db       3717 GUGGCGAUGAUUAAAAGAAACUUUAACGCACCCGAGUUGUCUGGCAUCAUUGAUAUUGAA 3776

Qy       3231 AGCACCGCATCTGTTGTAGTAGATAAGTTTTTTGATAGCTATTTTATTAAAAAAGAAAAA 3290
              |  || |||:|: : |: |:|||:||||::::::||:|| :|:::  ::||| || ||| |
Db       3777 AAUACUGCAUCUUUGGUUGUAGAUAAGUUUUUUGAUAGUUAUUUGCUUAAAGAAAAAAGA 3836

Qy       3291 TACACAAAAAATATTGCTGGAGTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAAC 3350
               |  |||| || | :| :    :| : |  |  || :|  : |  |||:||:: |||||
Db       3837 AAACCAAAUAAAAAUGUUUCUUUGUUCAGUAGAGAGUCUCUCAAUAGAUGGUUAGAAAAG 3896

Qy       3351 AGGAAAGAAGTACTATTGGACGACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATC 3410
                | || | |:|  | : | | |  : ||  | :   |::::   ||: :||| ||   :
Db       3897 CAGGAACAGGUAACAAUAGGCCAGCUCGCAGAUUUUGAUUUUGUGGAUUUGCCAGCAGUU 3956

Qy       3411 GATCAGTACAAGCACATGATCAAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAG 3470
              ||:|||:|||  ||||:||: || || ||||| ||||| || ::||||  ::|||: ||
Db       3957 GAUCAGUACAGACACAUGAUUAAAGCACAACCCAAACAAAAGUUGGACACUUCAAUCCAA 4016

Qy       3471 AATGAATACCCTGCTCTGCAAACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTG 3530
              |  || :|||| ||: :||| || |::|: :||||::| ||  |||:||| |  |: ::
Db       4017 ACGGAGUACCCGGCUUUGCAGACGAUUGUGUACCAUUCAAAAAAGAUCAAUGCAAUAUUC 4076
```

```
Qy       3531 GCCGGTTTCT---CAGAGCTTACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTT 3587
              | |   :: :     ||||::|| |||    : |: ||     ::||::| |  |  :::
Db       4077 GGCCCGUUGUUUAGUGAGCUUACUAGGCAAUUACUGGACAGUGUUGAUUCGAGCAGAUUU 4136

Qy       3588 CTTTTCTTTACTAGGAAAACTCCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCG 3647
               : :: :: || || || || ||||  ||||:: | || :: ::|   ||:|:||||
Db       4137 UUGUUUUUCACAAGAAAGACACCAGCGCAGAUUGAGGAUUUCUUCGGAGAUCUCGACAGU 4196

Qy       3648 CACGTTCCTATGGATGTGTTAGAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAG 3707
              || |: || |:|||:|: :: || |:|||:|: :| || :| || || :| ||||| ||
Db       4197 CAUGUGCCGAUGGAUGUCUUGGAGCUGGAUAUAUCAAAAUACGACAAAUCUCAGAAUGAA 4256

Qy       3708 TTTCATTGTGCTGTAGAGTATGAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCC 3767
              :: || :|:|| |:||| :| || |: :||  ||||::|||: :  | || :: ::||
Db       4257 UUCCACUGUGCAGUAGAAUACGAGAUCUGGCGAAGAUUGGGUUUUGAAGACUUCUUGGGA 4316

Qy       3768 GAAGTGTGGAAACAAGGGCACAGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAG 3827
              ||||: :||||||||||||| || || || ||  : |||||::| |  || || |: ||
Db       4317 GAAGUUUGGAAACAAGGGCAUAGAAAGACCACCCUCAAGGAUUAUACCGCAGGUAUAAAA 4376

Qy       3828 ACATGTCTGTGGTATCAAAGGAAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTT 3887
              || :|  : :||:|:||||| || ||||| || |: || || ::||: || || ||:|:
Db       4377 ACUUGCAUCUGGUAUCAAAGAAAGAGCGGGGACGUCACGACGUUCAUUGGAAACACUGUG 4436

Qy       3888 ATAATAGCAGCTTGCTTGGGTTCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTT 3947
              |: |: || || :| ::||  :| |:| : ||||:||| ||  : |: ||||| || :::
Db       4437 AUCAUUGCUGCAUGUUUGGCCUCGAUGCUUCCGAUGGAGAAAAUAAUCAAAGGAGCCUUU 4496

Qy       3948 TGTGGAGACGATTCCGTTTTGTATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCA 4007
              :| || |||||:    :  :|:| :::||||||||::  || :: || ||  : ||
Db       4497 UGCGGUGACGAUAGUCUGCUGUACUUUCCAAAGGGUUGUGAGUUUCCGGAUGUGCAACAC 4556

Qy       4008 TGTGCTAATCTCATGTGGAATTTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTT 4067
              :  || ||:|: |:|:||||::::|| || ||||:|: :| |||   |:| || :||:::
Db       4557 UCCGCGAAUCUUAUGUGGAAUUUUGAAGCAAAACUGUUUAAAAAACAGUAUGGAUACUUU 4616

Qy       4068 TGTGGTAGATACATCATACACCATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAG 4127
              :| || |||:|  : |:||| || || |  |||   |: |:|:|::| ||:||  : |||
Db       4617 UGCGGAAGAUAUGUAAUACAUCACGACAGAGGAUGCAUUGUGUAUUACGAUCCCCUAAAG 4676

Qy       4128 TTGATCTCCAAACTTGGGGCAAAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGG 4187
              ::||:|:| ||||::|| || ||||| |:||||||::  || |||:: || |||:: ||
Db       4677 UUGAUCUCGAAACUUGGUGCUAAACACAUCAAGGAUUGGGAACACUUGGAGGAGUUCAGA 4736

Qy       4188 GTGTCTTTGTGCGATGTTGCTTGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTG 4247
                |:|: : :| ||:|::||:  ::|| :    |||   :|       :   | ||| :|
Db       4737 AGGUCUCUUUGUGAUGUUGCUGUUUCGUU---GAACAAUUGUGCGUAUUACACACAGUUG 4793

Qy       4248 AACGCAGCTATCAAGGAGGTTCATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGT 4307
               |||  ||: :   |||||::||:|| |||||   :   ||::||:::| :: :||  |:
Db       4794 GACGACGCUGUAUGGGAGGUUCAUAAGACCGCCCCUCCAGGUUCGUUUGUUUAUAAAAGU 4853

Qy       4308 GTTAACAAATTTTTGTGTGATAAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAG 4367
               :    || : :::|: :||:||| :: : :::|||| :::|::: :| |:|||: :
Db       4854 CUGGUGAAGUAUUUGUCUGAUAAAGUUCUUUUUAGAAGUUUGUUUAUAGAUGGCUCUAGU 4913

Qy       4368 TCTCAGAGATACTGTCAAAATTAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACT 4427
              : : | ||  |  |: || |: |  |||:: |: || |: :| |||  |||  |||:  :
Db       4914 UGUUAAAGGAAAAGUGAAUAUCAAUGAGUUUAUCGACCUGUCAAAAAUGGAGAAGAUCUU 4973

Qy       4428 TCCGGCATTCATGACTAAGGTCAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGC 4487
               ||| |  :  : ||    |: |||||:|::|     :| |  |: || || |: |:||
Db       4974 ACCGUCGAUGUUUACCCCUGUAAAGAGUGUUAUGUGUUCCAAAGUUGAUAAAAUAAUGGU 5033

Qy       4488 TGTTAAGAATGATAGTCTTTCTGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAA 4547
              :  : ||||:||     : :| || |:  |  : |::||||| |::||| :  :: | |
Db       5034 UCAUGAGAAUGAGUCAUUGUCAGAGGUGAACCUUCUUAAAGGAGUUAAGCUUAUUGAUAG 5093

Qy       4548 AGGGTATGTGTGCTTAGCTGATTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTG 4607
               || :| |: :| ::||| | :::||: |:  | || |||:||||  : || || || :|
Db       5094 UGGAUACGUCUGUUUAGCCGGUUUGGUCGUCACGGGCGAGUGGAACUUGCCUGACAAUUG 5153

Qy       4608 CCGTGGTGGTGTCAGTGTTTGTATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAAC 4667
              | | || ||:|: || |: :|: : |: || || || |:| ||||     | || || ||
Db       5154 CAGAGGAGGUGUGAGCGUGUGUCUGGUGGACAAAAGGAUGGAAAGAGCCGACGAGGCCAC 5213

Qy       4668 GCTGGGTGCGTATCACGCCCCTGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAA 4727
               |: ||  | :|  || |  | ||:   || || |  :::   :: ||| :  : || ||
Db       5214 UCUCGGAUCUUACUACACAGCAGCUGCAAAGAAAAGAUUUCAGUUCAAGGUCGUUCCCAA 5273

Qy       4728 TTATTCAATAACATCCGAGGATGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAA 4787
              ::|: | |:|||  || |||| ||   |||  ||   :||||||: ::||: ||:|: |
Db       5274 UUAUGCUAUAACCACCCAGGACGCGAUGAAAAACGUCUGGCAAGUUUUAGUUAAUAUUAG 5333

Qy       4788 AGGAGTGGCTATGGAAGAAGGATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGT 4847
              |   |:|   |:|  ||  || : |:|:||  : :|: :||||:: |: :|  : :|: :
Db       5334 AAAUGUGAAGAUGUCAGCGGGUUUCUGUCCGCUUUCUCUGGAGUUUGUGUCGGUGUGUAU 5393

Qy       4848 AGTACATAAAAATAATGTAAGAAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGG 4907
               |:  |:| |||:||: :|| |  |||:::||| ||    |::   |  |:|| ||||||
Db       5394 UGUUUAUAGAAAUAAUAUAAAAUUAGGUUUGAGAGAGAAGAUUACAAACGUGAGAGACGG 5453

Qy       4908 CTCGCCAATTGAACTCACTGAAAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGC 4967
                 ||| |: ||||: || ||| | |: |::|| |||::| :||| || |: || |:| |
Db       5454 AGGGCCCAUGGAACUUACAGAAGAAGUCGUUGAUGAGUUCAUGGAAGAUGUCCCUAUGUC 5513

Qy       4968 TGTGA 4972
                : |
Db       5514 GAUCA 5518

RESULT 7
US-09-466-422-2
; Sequence 2, Application US/09466422
; Patent No. 6303779
;   GENERAL INFORMATION:
;        APPLICANT: GARGER, STEPHEN
;                   HOLTZ, R. BARRY
;                   McCULLOCH, MICHAEL
;                   TURPEN, THOMAS
;        TITLE OF INVENTION: A PROCESS FOR ISOLATING AND
;                            PURIFYING VIRUSES SOLUBLE PROTEINS AND PEPTIDES
;                            FROM PLANT SOURCES
;        NUMBER OF SEQUENCES: 5
;        CORRESPONDENCE ADDRESS:
;             ADDRESSEE: Howrey & Simon
;             STREET: 1299 Pennsylvania Avenue N.W.
;             CITY: Washington
;             STATE: DC
;             COUNTRY: USA
;             ZIP: 20004
;        COMPUTER READABLE FORM:
;             MEDIUM TYPE: Diskette
;             COMPUTER: IBM Compatible
;             OPERATING SYSTEM: DOS
;             SOFTWARE: FastSEQ for Windows Version 2.0
;        CURRENT APPLICATION DATA:
;             APPLICATION NUMBER: US/09/466,422
;             FILING DATE: 17-Dec-1999
;             CLASSIFICATION: <Unknown>
;        PRIOR APPLICATION DATA:
;             APPLICATION NUMBER: 09/037,751
;             FILING DATE: <Unknown>
;        ATTORNEY/AGENT INFORMATION:
;             NAME: Halluin, Albert P
;             REGISTRATION NUMBER: 25,277
;             REFERENCE/DOCKET NUMBER: 00801.0140.999
;        TELECOMMUNICATION INFORMATION:
;             TELEPHONE: 650-463-8109
;             TELEFAX: 650-463-8400
;             TELEX: <Unknown>
;   INFORMATION FOR SEQ ID NO: 2:
;        SEQUENCE CHARACTERISTICS:
;             LENGTH: 6439 base pairs
;             TYPE: nucleic acid
```

```
;              STRANDEDNESS: single
;              TOPOLOGY: unknown
;         MOLECULE TYPE: Genomic RNA
;         SEQUENCE DESCRIPTION: SEQ ID NO: 2:
US-09-466-422-2

  Query Match             40.9%;  Score 2034.2;  DB 3;  Length 6439;
  Best Local Similarity   44.4%;  Pred. No. 0;
  Matches 2214;  Conservative  957;  Mismatches 1793;  Indels   21;  Gaps    4;

Qy          6 AAGGTAATTCCTGAGTTTCAAAGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAA 65
              ||   | : ||  | :: |||| ||| || ::: |||| :| ||||||  :||  | ||
Db        537 AAAACAGUCCCCAACUUCCAAAAGGAAGCAUUUGACAGAUACGCAGAAAUUCCUGAAGAC 596

Qy         66 GTCTGCTGCTCTAAAACTTTTCAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGA 125
              |    |:|    || ||::: |||      |||   || |||    || |    || |||
Db        597 GCUGUCUGUCACAAUACUUUCCAGACAAUGCGACAUCAGCCGAUGCAGCAAUCAGGCAGA 656

Qy        126 AGATACGCTGTTGCTCTGCACAGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCG 185
                 :| ||  ::|| |: |||||  : :|:|| |: || |   |:|||:: || || ||
Db        657 GUGUAUGCCAUUGCGCUACACAGCAUAUAUGACAUACCAGCCGAUGAGUUCGGGGCGGCA 716

Qy        186 TTAATATCTAAGAATATACATGTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTA 245
               :  :    || ||: : ||:   :| :|:|| ||:: |   ::  | ||     :  :
Db        717 CUCUUGAGGAAAAAUGUCCAUACGUGCUAUGCCGCUUUCCACUUCUCCGAGAACCUGCUU 776

Qy        246 CTAGACCAGACGGAGGTTACGCTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGAT 305
              |: ||  |  |  | |: |   :  | ||||:   |||   :::     | || || ||
Db        777 CUUGAAGAUUCAUACGUCAAUUUGGACGAAAUCAACGCGUGUUUUUCGCGCGAUGGAGAC 836

Qy        306 GATGTTTCTTTTTTCTTTGCTGATGAAAGTACTTTAAATTATAGTCATAAATACAAAAAT 365
               |  :  | ::::  :::||    || ||:||: : ||::|: |:||:|  :|    ||:
Db        837 AAGUUGACCUUUUCUUUUGCAUCAGAGAGUACUCUUAAUUAUUGUCAUAGUUAUUCUAAU 896

Qy        366 ATCTTGCATTATGTAGTTAAATCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAG 425
              |:  :  | :|:|:    ||| |::||:: || || :|:| :|||   |:::|| : |||
Db        897 AUUCUUAAGUAUGUGUGCAAAACUUACUUCCCGGCCUCUAAUAGAGAGGUUUACAUGAAG 956

Qy        426 GAATTTTTAGTCACTAGGGTTAATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTAT 485
              || :::::||:||| || |::||:|| :||::::|:|| ::: | | | :|||:|| : :
Db        957 GAGUUUUUAGUCACCAGAGUUAAUACCUGGUUUUGUAAGUUUUCUAGAAUAGAUACUUUU 1016

Qy        486 ATTCTGTACAAGAGTGTTAGACAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATG 545
               :: :|:||||  |:|:    ||   | |    ||:||:|| |||::  |:   || |:|
Db       1017 CUUUUGUACAAAGGUGUGGCCCAUAAAAGUGUAGAUAGUGAGCAGUUUUAUACUGCAAUG 1076

Qy        546 GAAGACGCCTTTGCTTACAAGAAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTT 605
              |||||||| :    ::|||| || ||  : || |:|: |||||  || |||    :| ::
Db       1077 GAAGACGCAUGGCAUUACAAAAAGACUCUUGCAAUGUGCAACAGCGAGAGAAUCCUCCUU 1136

Qy        606 AGAGACACGGCTTCGGTTAACTTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCG 665
                 ||  |  | :| |: || :  :||:: || || |:|| ||| |:||: |: |:|||
Db       1137 GAGGAUUCAUCAUCAGUCAAUUACUGGUUUCCCAAAAUGAGGGAUAUGGUCAUCGUACCA 1196

Qy        666 CTGTTTGAGGGTTCTATTACCAGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGT 725
               : :: ||   ::|: :    |  |  |||| |||  | |  || |:| : |:
Db       1197 UUAUUCGACAUUUCUUUGGAGACUAGUAAGAGGACGCGCAAGGAAGUCUUAGUGUCCAAG 1256

Qy        726 GACTTCGTTTACACAGTGCTTAATCATATCAGAACATATCAAGCCAAAGCGTTAACTTAC 785
              || ::||: :  ||||:||::|| || |:  |||||:| || || |||||  : || :||
Db       1257 GAUUUCGUGUUUACAGUGCUUAACCACAUUCGAACAUACCAGGCGAAAGCUCUUACAUAC 1316

Qy        786 CAGAACGTATTATCTTTCGTGGAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACT 845
                 || |: :: :|  : |: || :| |:  ||:|  | |: |: |: || ||:|: ||
Db       1317 GCAAAUGUUUUGUCCCUUGUCGAAUCGAUUCGAUCGAGGGUAAUCAUUAACGGUGUGACA 1376

Qy        846 GCTAGGTCTGAATGGGATGTAGATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTC 905
              || |||:| |||:||||:|: || ||| |  :  : ||| ||::|:| |:||| :: : |
Db       1377 GCGAGGUCCGAAUGGGAUGUGGACAAAUCUUUGUUACAAUCCUUGUCCAUGACGUUUUAC 1436

Qy        906 TTGCAGACTAAGCTGGCTGCGCTTCAAGACGATATAGTAATGGGAAAGTTTCGGTGCTTG 965
               :||| ||:||||: || |  |:  | || ||  :| : |:  | |||::: |   |
Db       1437 CUGCAUACUAAGCUUGCCGUUCUAAAGGAUGACUUACUGAUUAGCAAGUUUAGUCUCGGU 1496

Qy        966 GATAAGACCACTTCTGAACTTATTTGGGATGAGGTGGGCAAATTTTTTGGAAACGTTTTC 1025
                 || ||    :   | | : : :||||:||| :          :::|| ||||  ::
Db       1497 UCGAAAACGGUGUGCCAGCAUGUGUGGGAUGAGAUUUCGCUGGCGUUUGGGAACGCAUUU 1556

Qy       1026 CCCACTATCAAAGAGAGATTGGTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTG 1085
              ||| |  : ||||||||| :  :|| |||||||| :: :    |:    |   | ||  :
Db       1557 CCCUCCGUGAAAGAGAGACUCUUGAACAGGAAACUUAUCAGAGUGGCAGGCGACGCAUUA 1616

Qy       1086 AAGATCAAGATCCCAGATCTGTATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACC 1145
               |||:|| | : || ||:|: :|:|: || :   | ||||| :: |:  |:|| :|||
Db       1617 GAGAUCAGGGUGCCUGAUCUAUAUGUGACCUUCCACGACAGAUUAGUGACUGAGUACAAG 1676

Qy       1146 AAGTCTGAGGAGTTACCGCATCTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATG 1205
                 :|:| |||  : ||    |: || |: | |||| |  : |||||| | ||    |:|
Db       1677 GCCUCUGUGGACAUGCCUGCGCUUGACAUUAGGAAGAAGAUGGAAGAAACGGAAGUGAUG 1736

Qy       1206 TACGACGCGTTATCAGAATTATCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAG 1265
              :|| | ||  : :|||| ::|:|  :  : | ||   |:|| || ::|||: : |
Db       1737 UACAAUGCACUUUCAGAGUUAUCGGUGUUAAGGGAGUCUGACAAAUUCGAUGUUGAUGUU 1796

Qy       1266 TTCAAAGACATGTGCAAGGCTTTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTT 1325
              ::     | |:|:|| |  |::: || |::   ||       ||||||    |: |: |:
Db       1797 UUUUCCCAGAUGUGCCAAUCUUUGGAAGUUGACCCAAUGACGGCAGCGAAGGUUAUAGUC 1856

Qy       1326 GCAGTGGCCGAGAATAGAAGCGGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAAT 1385
              || |:       ||:   ||||||: : ||:|: || :::||    || || |||| |||:
Db       1857 GCGGUCAUGAGCAAUGAGAGCGGUCUGACUCUCACAUUUGAACGACCUACUGAGGCGAAU 1916

Qy       1386 GTGGCTAAGGCTCT------TAAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCG 1439
              |: ||    ||: :      : ||   | ||| :| || |  |   :     ::    |
Db       1917 GUUGCGCUAGCUUUACAGGAUCAAGAGAAGGCUUCAGAAGGUGCAUUGGUAGUUACCUCA 1976

Qy       1440 ACATCCGAAGAGGTGAACGTAAATAAATTTTCTATTGCTGAGAAAGGGAGATTGCCTGTG 1499
              | |   |  || |        |  ||   ::| |: ||      || |  |      |
Db       1977 AGAGAAGUUGAAGAACCGUCCAUGAAGGGUUCGAUGGCCAGAGGAGAGUUACAAUUAGCU 2036

Qy       1500 TGTGCAGAAAGTCATGGTTTGACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTC 1559
               |:   |   |  |:  :  |  |    |  | :   || || ||||| : ||||:|  :
Db       2037 GGUCUUGCUGGAGAUCAUCCGGAGUCGUCCUAUUCUAAGAACGAGGAGAUAGAGUCUUUA 2096

Qy       1560 AACGATTTCCATAAGGCTTGCGTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTC 1619
               |  | :: ||:| |||    |  ||:    : |::   ||||| |:|   :|| ::|:
Db       2097 GAGCAGUUUCAUAUGGCGACGGCAGAUUCGUUAAUUCGUAAGCAGAUGAGCUCGAUUGUG 2156

Qy       1620 TACACTGGCTCACTCAAAGTTCAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCG 1679
              :|||| ||  |  : ||||::|| ||||:||| |||: : : || ||  :|| ||| :|
Db       2157 UACACGGGUCCGAUUAAAGUUCAGCAAAUGAAAAACUUUAUCGAUAGCCUGGUAGCAUCA 2216

Qy       1680 TTGTCCGCCACTGTATCAAATCTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCT 1739
               : :| ||  | |: :| ||:|:   ||||   |: || ||:  ||  |    :||   :
Db       2217 CUAUCUGCUGCGGUGUCGAAUCUCGUCAAGAUCCUCAAAGAUACAGCUGCUAUUGACCUU 2276

Qy       1740 GATTCCAGGGAGAAAGTTGGTGTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCT 1799
              ||  || |  | ||  ::|| |: : |||:|:  | :  |  |||:|| :  :||||||
Db       2277 GAAACCCGUCAAAAGUUUGGAGUCUUGGAUGUUGCAUCUAGGAAGUGGUUAAUCAAACCA 2336

Qy       1800 GCGGCCAAAGGTCATTCATGGGGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCA 1859
               |||||||  |:||: ||:|||| |::|:        ||  | ||||      :   ||
Db       2337 ACGGCCAAGAGUCAUGCAUGGGGUGUUGUUGAAACCCACGCGAGGAAGUAUCAUGUGGCG 2396

Qy       1860 CTTCTATCTTATGAAGGAGATAGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTA 1919
              |:: :    :|:|| |   |  |  :||:|||||       || :|||| || |: ||:|:
Db       2397 CUUUUGGAAUAUGAUGAGCAGGGUGUGGUGACAUGCGAUGAUUGGAGAAGAGUAGCUGUU 2456

Qy       1920 TCATCTGATACAATGGTATATTCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATG 1979
                 :|:||  |  : |: :|::| || |: || || |:|  || :|:| | | |    :
Db       2457 AGCUCUGAGUCUGUUGUUUAUUCCGACAUGGCGAAACUCAGAACUCUGCGCAGACUGCUU 2516

Qy       1980 AGAGACGGTGAACCCCACGAACCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGT 2039
               || |||| ||||| || |    :|  ||||||| : |: |::|:||| || |: || ||
Db       2517 CGAAACGGAGAACCGCAUGUCAGUAGCGCAAAGGUUGUUCUUGUGGACGGAGUUCCGGGC 2576
```

```
Qy          2040 TGTGGAAAGTACAAAGGAGATTTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTT 2099
                 :|:|||||   ||||| |  : ::    || :: |: ::||:|| ||: : |: :: |:
Db          2577 UGUGGAAAAACCAAAGAAAUUCUUUCCAGGGUUAAUUUUGAUGAAGAUCUAAUUUUAGUA 2636

Qy          2100 CCTGGAAAACAAGCTGCTGCTATGATCAGAAGAAGGGCTAATTCATCTGGACTGATAAGA 2159
                 ||:|| || ||||| || |  |:||:||||||| | || ||::| :| ||  : |:
Db          2637 CCUGGGAAGCAAGCCGCGGAAAUGAUCAGAAGACGUGCGAAUUCCUCAGGGAUUAUUGUG 2696

Qy          2160 GCCACAATGGACAATGTGAGAACGGTAGATTCACTTCTAATGCAT---------CCAAAA 2210
                 ||||| | |||||| |: | ||| |: ||::|  :  : |:| |:            | |
Db          2697 GCCACGAAGGACAACGUUAAAACCGUUGAUUCUUUCAUGAUGAAUUUGGGAAAAGCACA 2756

Qy          2211 CCGCGATCACACAAGAGGCTTTTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTT 2270
                 |   |      |||||| : ::  |::||:|||||||::||:| :||| || ||::|:|::
Db          2757 CGCUGUCAGUUCAAGAGGUUAUUCAUUGAUGAAGGGUUGAUGUUGCAUACUGGUUGUGUU 2816

Qy          2271 AACTTCCTGGTGCTTATCTCTGGTTGCGACATCGCATACATTTACGGAGATACACAGCAG 2330
                 || :: |: |:|    |:.:|     :||||  |: |||:|   :::|||||||  ||||||||||
Db          2817 AAUUUUCUUGUGGCGAUGUCAUUGUGCGAAAUUGCAUAUGUUUACGGAGACACACAGCAG 2876

Qy          2331 ATTCCTTTCATTAACAGAGTTCAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAA 2390
                 |::|| : ||: || ||||::      ::||||:| |||    ||::::|  ||   :| ||
Db          2877 AUUCCAUACAUCAAUAGAGUUUCAGGAUUCCCGUACCCCGCCCAUUUUGCCAAAUUGGAA 2936

Qy          2391 GTGGATGAAGTTGAGATGAGGAGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTC 2450
                 |: || || |: ||||    | || || || |:  | :| ||||  ||:|: |    .::
Db          2937 GUUGACGAGGUGGAGACACGCAGAACUACUCUCCGUUGUCCAGCCGAUGUCACACAUUAU 2996

Qy          2451 CTACAATCGAAGTACGAAGGAGCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCA 2510
                 |:  |   ||  :| || ||    |: |  | |||::|  | |:  ||   :| |: :|
Db          2997 CUGAACAGGAGAUAUGAGGGCUUUGUCAUGAGCACUUCUUCGGUUAAAAAGUCUGUUUCG 3056

Qy          2511 TCTGAGATGATAGGCGGTAAGGGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGGAAA 2570
                    ||||:| : |||||    |  |:  : ||      : :| |||||  :  | || ||
Db          3057 CAGGAGAUGGUCGGCGGAGCCGCCGUGAUCAAUCCGAUCUCAAAACCCUUGCAUGGCAAG 3116

Qy          2571 ATTGTAACTTTCACTCAGGCTGATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTG 2630
                 |:  : ||::: || ||  | ||:|||   |   :        | || :|:   |:|:
Db          3117 AUCCUGACUUUUACCCAAUCGGAUAAAGAAGCUCUGCUUUCAAGAGGGUAUUCAGAUGUU 3176

Qy          2631 AACACCGTTCATGAGATCCAAGGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACG 2690
                  |||| |: ||:||  : ||||| || ||  :      ||:|: :| |: |: || :: ||
Db          3177 CACACUGUGCAUGAAGUGCAAGGCGAGACAUACUCUGAUGUUUCACUAGUUAGGUUAACC 3236

Qy          2691 GCAACTCCACTGACTCTGATTTCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGA 2750
                  | || |||  :  |  : |:: |         ||| ||:|:: : |:|||  :| | ||
Db          3237 CCUACACCAGUCUCCAUCAUUGCAGGAGACAGCCCACAUGUUUUGGUCGCAUUGUCAAGG 3296

Qy          2751 CACACAAAGAGCTTCAAATATTACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGT 2810
                 |||||        :||| :| :|||| |: |:  : ||:||:::||:    |: |::||
Db          3297 CACACCUGUUCGCUCAAGUACUACACUGUUGUUAUGGAUCCUUUAGUUAGUAUCAUUAGA 3356

Qy          2811 GATTTGTCTTCTTTAAGCTCCTTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGA 2870
                 ||: :        : |||:| : | : ::||| |:|:|:| ||: || ||||| |    |
Db          3357 GAUCUAGAGAAACUUAGCUCGUACUUGUUAGAUAUGUAUAAGGUCGAUGCAGGAACACAA 3416

Qy          2871 TAGCAATTACAGATGGATGCAGTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAA 2930
                 :|||||::|||||: ||  | |:|::|||||||:   ||:|: :::|: ||| | || ||
Db          3417 UAGCAAUUACAGAUUGACUCGGUGUUCAAAGGUUCCAAUCUUUUUGUUGCAGCGCCAAAG 3476

Qy          2931 TCAGGAGACTTTCCAGATCTACAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACT 2990
                  | || ||  :: | ||: : |||:: :| :| ||:   :| |:||| || || || ||
Db          3477 ACUGGUGAUAUUUCUGAUAUGCAGUUUUACUAUGAUAAGUGUCUCCCAGGCAACAGCACC 3536

Qy          2991 ATACTTAACAAGTATGATGCTGTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAG 3050
                 |:  : || || : :||:||:|::||||:||||::   :|| | :    : ||:|: ||
Db          3537 AUGAUGAAUAAUUUUGAUGCUGUUACCAUGAGGUUGACUGACAUUUCAUUGAAUGUCAAA 3596

Qy          3051 GATTGTGTTCTTGATTTTTCCAAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTA 3110
                 ||::|  :  : ||: : :| ||   : ::|    ||| |||||    |    |  |:|
Db          3597 GAUUGCAUAUUGGAUAUGUCUAAGUCUGUUCGUGCGCCUAAGGAUCAAAUCAAACCACUA 3656

Qy          3111 GAGCCAGTTTTGCGTACCGCGGCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTG 3170
```

```
                   ||  :  : || || ||||| |||  |||| |     | ||||:| : |||||: :
Db          3657 AUACCUAUGGUACGAACGGCGGCAGAAAUGCCACGCCAGACUGGACUAUUGGAAAAUUUA 3716

Qy          3171 GTTGCAATGATTAAAAGAAATTTCAACGCACCAGACCTGACGGGGACGATTGACATTGAG 3230
                 |: || |:||::||||||||  :: |||||||| ||   :| | || |   |::|| |::||
Db          3717 GUGGCGAUGAUUAAAAGAAACUUUAACGCACCCGAGUUGUCUGGCAUCAUUGAUAUUGAA 3776

Qy          3231 AGCACCGCATCTGTTGTAGTAGATAAGTTTTTTGATAGCTATTTTATTAAAAAAGAAAAA 3290
                 |  || |||:|: : |: |:||||:||||:::::||:||  :|:::   ::||| || ||| |
Db          3777 AAUACUGCAUCUUUGGUUGUAGAUAAGUUUUUUGAUAGUUAUUUGCUUAAAGAAAAAAGA 3836

Qy          3291 TACACAAAAAATATTGCTGGAGTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAAC 3350
                  | |||| || | :| :    :| : |  | || :|  : |  |||:||:: |||||
Db          3837 AAACCAAAUAAAAAUGUUUCUUUGUUCAGUAGAGAGUCUCUCAAUAGAUGGUUAGAAAAG 3896

Qy          3351 AGGAAAGAAGTACTATTGGACGACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATC 3410
                   | || | |:|  | : | | |  : ||  | :  |::::   ||: :||| ||  :
Db          3897 CAGGAACAGGUAACAAUAGGCCAGCUCGCAGAUUUUGAUUUUGUGGAUUUGCCAGCAGUU 3956

Qy          3411 GATCAGTACAAGCACATGATCAAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAG 3470
                 ||:|||:|||  ||||:||: || || ||||| ||||| || ::||||  ::|||: ||
Db          3957 GAUCAGUACAGACACAUGAUUAAAGCACAACCCAAACAAAAGUUGGACACUUCAAUCCAA 4016

Qy          3471 AATGAATACCCTGCTCTGCAAACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTG 3530
                 |  || :|||| ||: :||| || |::|: :||||::| ||   |||:||| |  |: ::
Db          4017 ACGGAGUACCCGGCUUUGCAGACGAUUGUGUACCAUUCAAAAAAGAUCAAUGCAAUAUUC 4076

Qy          3531 GCCGGTTTCT---CAGAGCTTACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTT 3587
                 | |   :: :     ||||::|| |||      : |: ||     ::||::| |  | :::
Db          4077 GGCCCGUUGUUUAGUGAGCUUACUAGGCAAUUACUGGACAGUGUUGAUUCGAGCAGAUUU 4136

Qy          3588 CTTTTCTTTACTAGGAAAACTCCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCG 3647
                  : :: :: || || || || ||||  ||||:: | || :: ::|   ||:|:||||
Db          4137 UUGUUUUUCACAAGAAAGACACCAGCGCAGAUUGAGGAUUUCUUCGGAGAUCUCGACAGU 4196

Qy          3648 CACGTTCCTATGGATGTGTTAGAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAG 3707
                 || |: || |:|||:|: :: || |:|||:|: :| || :| || || :| ||||| ||
Db          4197 CAUGUGCCGAUGGAUGUCUUGGAGCUGGAUAUAUCAAAAUACGACAAAUCUCAGAAUGAA 4256

Qy          3708 TTTCATTGTGCTGTAGAGTATGAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCC 3767
                 :: || :|:|| |:||| :| || |: :||  ||||::|||: :   | || :: ::||
Db          4257 UUCCACUGUGCAGUAGAAUACGAGAUCUGGCGAAGAUUGGGUUUUGAAGACUUCUUGGGA 4316

Qy          3768 GAAGTGTGGAAACAAGGGCACAGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAG 3827
                 ||||: :||||||||||||| |.| || || ||   : |||||::| |  || || |: ||
Db          4317 GAAGUUUGGAAACAAGGGCAUAGAAAGACCACCCUCAAGGAUUAUACCGCAGGUAUAAAA 4376

Qy          3828 ACATGTCTGTGGTATCAAAGGAAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTT 3887
                 || :|  : :||:|:||||| || ||||| || |: || || ::||: || || ||:|:
Db          4377 ACUUGCAUCUGGUAUCAAAGAAAGAGCGGGGACGUCACGACGUUCAUUGGAAACACUGUG 4436

Qy          3888 ATAATAGCAGCTTGCTTGGGTTCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTT 3947
                 |: |: || || :| ::||  :| |:| : ||||:||| ||    : |: ||||| || :::
Db          4437 AUCAUUGCUGCAUGUUUGGCCUCGAUGCUUCCGAUGGAGAAAAUAAUCAAAGGAGCCUUU 4496

Qy          3948 TGTGGAGACGATTCCGTTTTGTATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCA 4007
                 :| || |||||:     :   :|:| :::||||||||::   || :: || ||   : ||
Db          4497 UGCGGUGACGAUAGUCUGCUGUACUUUCCAAAGGGUUGUGAGUUUCCGGAUGUGCAACAC 4556

Qy          4008 TGTGCTAATCTCATGTGGAATTTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTT 4067
                 :   || ||:|: |:|:||||::::|| || ||||:|: :| |||    |:| || :||:::
Db          4557 UCCGCGAAUCUUAUGUGGAAUUUUGAAGCAAAACUGUUUAAAAAACAGUAUGGAUACUUU 4616

Qy          4068 TGTGGTAGATACATCATACACCATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAG 4127
                 :| || |||:|   : |:||| || || |  |||    |: |:|:|::| ||:||   : |||
Db          4617 UGCGGAAGAUAUGUAAUACAUCACGACAGAGGAUGCAUUGUGUAUUACGAUCCCCUAAAG 4676

Qy          4128 TTGATCTCCAAACTTGGGGCAAAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGG 4187
                 ::||:|:| ||||::|| || ||||| |:|||||||::   || |||:: || |||:: ||
Db          4677 UUGAUCUCGAAACUUGGUGCUAAACACAUCAAGGAUUGGGAACACUUGGAGGAGUUCAGA 4736

Qy          4188 GTGTCTTTGTGCGATGTTGCTTGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTG 4247
                 . |:|: : :| ||:|::||:  ::|| :     |||   :|        :   | ||| :|
```

```
Db        4737 AGGUCUCUUUGUGAUGUUGCUGUUUCGUU---GAACAAUUGUGCGUAUUACACACAGUUG 4793

Qy        4248 AACGCAGCTATCAAGGAGGTTCATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGT 4307
                |||  ||: :   |||||::||:|| |||||   :   ||::||:::| :: :||  |:
Db        4794 GACGACGCUGUAUGGGAGGUUCAUAAGACCGCCCCUCCAGGUUCGUUUGUUUAUAAAAGU 4853

Qy        4308 GTTAACAAATTTTTGTGTGATAAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAG 4367
                :    || : :::|: :||:||| :: : :::|||| :::|::: :| |:|||: :
Db        4854 CUGGUGAAGUAUUUGUCUGAUAAAGUUCUUUUUAGAAGUUUGUUUAUAGAUGGCUCUAGU 4913

Qy        4368 TCTCAGAGATACTGTCAAAATTAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACT 4427
               : : | ||  |  |: || |: |  |||:: |: || |: :| |||  |||  |||:  :
Db        4914 UGUUAAAGGAAAAGUGAAUAUCAAUGAGUUUAUCGACCUGUCAAAAAUGGAGAAGAUCUU 4973

Qy        4428 TCCGGCATTCATGACTAAGGTCAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGC 4487
                ||| |  :  : ||    |: |||||:|::|     :| |  |: || || |: |:||
Db        4974 ACCGUCGAUGUUUACCCCUGUAAAGAGUGUUAUGUGUUCCAAAGUUGAUAAAAUAAUGGU 5033

Qy        4488 TGTTAAGAATGATAGTCTTTCTGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAA 4547
               :  : ||||:||     : :| ||   | |  : |::||||| |::||| :  :: | |
Db        5034 UCAUGAGAAUGAGUCAUUGUCAGAGGUGAACCUUCUUAAAGGAGUUAAGCUUAUUGAUAG 5093

Qy        4548 AGGGTATGTGTGCTTAGCTGATTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTG 4607
                || :| |: :| ::||| | :::||: |:  | || |||:||||  : || || || :|
Db        5094 UGGAUACGUCUGUUUAGCCGGUUUGGUCGUCACGGGCGAGUGGAACUUGCCUGACAAUUG 5153

Qy        4608 CCGTGGTGGTGTCAGTGTTTGTATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAAC 4667
               | | || ||:|: || |: :|: : |: || || || |:| ||||     | || || ||
Db        5154 CAGAGGAGGUGUGAGCGUGUGUCUGGUGGACAAAAGGAUGGAAAGAGCCGACGAGGCCAC 5213

Qy        4668 GCTGGGTGCGTATCACGCCCCTGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAA 4727
                |: ||  | :|  || |  | ||:   || || |  :::   :: ||| :  : || ||
Db        5214 UCUCGGAUCUUACUACACAGCAGCUGCAAAGAAAAGAUUUCAGUUCAAGGUCGUUCCCAA 5273

Qy        4728 TTATTCAATAACATCCGAGGATGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAA 4787
               ::|: | |:|||  || |||| ||   |||  ||   :||||||: ::||: ||:|: |
Db        5274 UUAUGCUAUAACCACCCAGGACGCGAUGAAAAACGUCUGGCAAGUUUUAGUUAAUAUUAG 5333

Qy        4788 AGGAGTGGCTATGGAAGAAGGATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGT 4847
               |   |:|   |:|  ||  || : |:|:||  : :|: :||||:: |: :|  : :|: :
Db        5334 AAAUGUGAAGAUGUCAGCGGGUUUCUGUCCGCUUUCUCUGGAGUUUGUGUCGGUGUGUAU 5393

Qy        4848 AGTACATAAAAATAATGTAAGAAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGG 4907
                |:  |:| |||:||: :|| |  |||:::||| ||    |::   |  |:|| ||||||
Db        5394 UGUUUAUAGAAAUAAUAUAAAAUUAGGUUUGAGAGAGAAGAUUACAAACGUGAGAGACGG 5453

Qy        4908 CTCGCCAATTGAACTCACTGAAAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGC 4967
                  ||| |: ||||: || ||| | |: |::|| |||::| :||| || |: || |:| |
Db        5454 AGGGCCCAUGGAACUUACAGAAGAAGUCGUUGAUGAGUUCAUGGAAGAUGUCCCUAUGUC 5513

Qy        4968 TGTGA 4972
                 : |
Db        5514 GAUCA 5518


RESULT 8
US-09-962-527-2
; Sequence 2, Application US/09962527
; Patent No. 6740740
;  GENERAL INFORMATION:
;       APPLICANT: GARGER, STEPHEN
;                  HOLTZ, R. BARRY
;                  McCULLOCH, MICHAEL
;                  TURPEN, THOMAS
;       TITLE OF INVENTION: A PROCESS FOR ISOLATING AND
;                           PURIFYING VIRUSES SOLUBLE PROTEINS AND PEPTIDES
;                           FROM PLANT SOURCES
;       NUMBER OF SEQUENCES: 5
;       CORRESPONDENCE ADDRESS:
;            ADDRESSEE: Howrey & Simon
;            STREET: 1299 Pennsylvania Avenue N.W.
;            CITY: Washington
;            STATE: DC
```

```
;            COUNTRY: USA
;            ZIP: 20004
;       COMPUTER READABLE FORM:
;            MEDIUM TYPE: Diskette
;            COMPUTER: IBM Compatible
;            OPERATING SYSTEM: DOS
;            SOFTWARE: FastSEQ for Windows Version 2.0
;       CURRENT APPLICATION DATA:
;            APPLICATION NUMBER: US/09/962,527
;            FILING DATE: 24-Sep-2001
;            CLASSIFICATION: <Unknown>
;       PRIOR APPLICATION DATA:
;            APPLICATION NUMBER: 09/037,751
;            FILING DATE: 10-march-1998
;       ATTORNEY/AGENT INFORMATION:
;            NAME: Halluin, Albert P
;            REGISTRATION NUMBER: 25,277
;            REFERENCE/DOCKET NUMBER: 00801.0140.999
;       TELECOMMUNICATION INFORMATION:
;            TELEPHONE: 650-463-8109
;            TELEFAX: 650-463-8400
;            TELEX: <Unknown>
;  INFORMATION FOR SEQ ID NO: 2:
;       SEQUENCE CHARACTERISTICS:
;            LENGTH: 6439 base pairs
;            TYPE: nucleic acid
;            STRANDEDNESS: single
;            TOPOLOGY: unknown
;       MOLECULE TYPE: Genomic RNA
;       SEQUENCE DESCRIPTION: SEQ ID NO: 2:
US-09-962-527-2

  Query Match             40.9%;  Score 2034.2;  DB 4;  Length 6439;
  Best Local Similarity   44.4%;  Pred. No. 0;
  Matches 2214;  Conservative  957;  Mismatches 1793;  Indels   21;  Gaps    4;

Qy           6 AAGGTAATTCCTGAGTTTCAAAGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAA 65
               ||   | : ||  | :: |||| ||| || ::: |||| :| ||||||  :||  | ||
Db         537 AAAACAGUCCCCAACUUCCAAAAGGAAGCAUUUGACAGAUACGCAGAAAUUCCUGAAGAC 596

Qy          66 GTCTGCTGCTCTAAAACTTTTCAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGA 125
               |    |:|    || ||::: |||      |||   || |||    || |    || |||
Db         597 GCUGUCUGUCACAAUACUUUCCAGACAAUGCGACAUCAGCCGAUGCAGCAAUCAGGCAGA 656

Qy         126 AGATACGCTGTTGCTCTGCACAGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCG 185
                  :| ||  ::|| |: |||||  : :|:|| |: || |   |:|||:: || || ||
Db         657 GUGUAUGCCAUUGCGCUACACAGCAUAUAUGACAUACCAGCCGAUGAGUUCGGGGCGGCA 716

Qy         186 TTAATATCTAAGAATATACATGTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTA 245
                :  :    || ||: : ||:   :| :|:|| ||:: |   ::  | ||     :  :
Db         717 CUCUUGAGGAAAAAUGUCCAUACGUGCUAUGCCGCUUUCCACUUCUCCGAGAACCUGCUU 776

Qy         246 CTAGACCAGACGGAGGTTACGCTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGAT 305
               |: ||  |  |  | |: |   :  | ||||:   |||   :::     | || || ||
Db         777 CUUGAAGAUUCAUACGUCAAUUUGGACGAAAUCAACGCGUGUUUUUCGCGCGAUGGAGAC 836

Qy         306 GATGTTTCTTTTTTCTTTGCTGATGAAAGTACTTTAAATTATAGTCATAAATACAAAAAT 365
                |  :  | :::::  :::||    || ||:||: : ||::|: |:||:|  :|    ||:
Db         837 AAGUUGACCUUUUCUUUUGCAUCAGAGAGUACUCUUAAUUAUUGUCAUAGUUAUUCUAAU 896

Qy         366 ATCTTGCATTATGTAGTTAAATCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAG 425
               |:  :  | :|:|:    ||| |::||:: || || :|:| :|||   |:::|| : |||
Db         897 AUUCUUAAGUAUGUGUGCAAAACUUACUUCCCGGCCUCUAAUAGAGAGGUUUACAUGAAG 956

Qy         426 GAATTTTTAGTCACTAGGGTTAATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTAT 485
               || :::::||:||| || |::||:|| :||::::|:|| ::: | | | :|||:|| : :
Db         957 GAGUUUUUAGUCACCAGAGUUAAUACCUGGUUUUGUAAGUUUUCUAGAAUAGAUACUUUU 1016

Qy         486 ATTCTGTACAAGAGTGTTAGACAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATG 545
                :: :|:||||  |:|:    ||   | |    ||:||:|| |||:: :|:   || |:|
Db        1017 CUUUUGUACAAAGGUGUGGCCCAUAAAAGUGUAGAUAGUGAGCAGUUUUAUACUGCAAUG 1076

Qy         546 GAAGACGCCTTTGCTTACAAGAAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTT 605
```

```
                  ||||||||  :    ::||||  ||  ||   :  ||  |:|:  |||||   ||  |||      :|  ::
Db          1077 GAAGACGCAUGGCAUUACAAAAAGACUCUUGCAAUGUGCAACAGCGAGAGAAUCCUCCUU 1136

Qy           606 AGAGACACGGCTTCGGTTAACTTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCG 665
                    ||   |   |  :|  |:  ||  :   :||::  ||  ||  |:||  |||  |:||:  |:  |:|||
Db          1137 GAGGAUUCAUCAUCAGUCAAUUACUGGUUUCCCAAAAUGAGGGAUAUGGUCAUCGUACCA 1196

Qy           666 CTGTTTGAGGGTTCTATTACCAGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGT 725
                  :  ::  ||    ::|:  :       |   |    ||||  |||    |  |    ||  |:|  :  |:
Db          1197 UUAUUCGACAUUUCUUUGGAGACUAGUAAGAGGACGCGCAAGGAAGUCUUAGUGUCCAAG 1256

Qy           726 GACTTCGTTTACACAGTGCTTAATCATATCAGAACATATCAAGCCAAAGCGTTAACTTAC 785
                 ||  ::||:  :    ||||:||::||  ||  |:    |||||:|  ||  ||  |||||     :  ||  :||
Db          1257 GAUUUCGUGUUUACAGUGCUUAACCACAUUCGAACAUACCAGGCGAAAGCUCUUACAUAC 1316

Qy           786 CAGAACGTATTATCTTTCGTGGAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACT 845
                    ||  |:  ::  :|    :  |:  ||  :|  |:    ||:|    |  |:  |:  |:  ||  ||:|:  ||
Db          1317 GCAAAUGUUUUGUCCCUUGUCGAAUCGAUUCGAUCGAGGGUAAUCAUUAACGGUGUGACA 1376

Qy           846 GCTAGGTCTGAATGGGATGTAGATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTC 905
                 ||  |||:|  |||:||||:|:  ||  |||  |     :    :  |||  ||::|:|  |:|||  ::  :  |
Db          1377 GCGAGGUCCGAAUGGGAUGUGGACAAAUCUUUGUUACAAUCCUUGUCCAUGACGUUUUAC 1436

Qy           906 TTGCAGACTAAGCTGGCTGCGCTTCAAGACGATATAGTAATGGGAAAGTTTCGGTGCTTG 965
                  :|||  ||:||||:  ||  |    |:    |  ||  ||    :|  :  |:    |  |||:::  |     |
Db          1437 CUGCAUACUAAGCUUGCCGUUCUAAAGGAUGACUUACUGAUUAGCAAGUUUAGUCUCGGU 1496

Qy           966 GATAAGACCACTTCTGAACTTATTTGGGATGAGGTGGCAAATTTTTGGAAACGTTTTC 1025
                    ||  ||      :      |  |  :  :  :||||:|||  :                    :::||  ||||    ::
Db          1497 UCGAAAACGGUGUGCCAGCAUGUGUGGGAUGAGAUUUCGCUGGCGUUUGGGAACGCAUUU 1556

Qy          1026 CCCACTATCAAAGAGAGATTGGTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTG 1085
                 |||  |    :  |||||||||  :    :||  |||||||  ::  :      |:        |    |  ||    :
Db          1557 CCCUCCGUGAAAGAGAGACUCUUGAACAGGAAACUUAUCAGAGUGGCAGGCGACGCAUUA 1616

Qy          1086 AAGATCAAGATCCCAGATCTGTATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACC 1145
                  |||:||  |  :  ||  ||:|:  :|:|:  ||  :      |  ||||||  ::  |:    |:||  :|||
Db          1617 GAGAUCAGGGUGCCUGAUCUAUAUGUGACCUUCCACGACAGAUUAGUGACUGAGUACAAG 1676

Qy          1146 AAGTCTGAGGAGTTACCGCATCTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATG 1205
                    :|:|  |||    :  ||        |:  ||  |:  |  ||||  |    :  ||||||  |  ||      |:|
Db          1677 GCCUCUGUGGACAUGCCUGCGCUUGACAUUAGGAAGAAGAUGGAAGAAACGGAAGUGAUG 1736

Qy          1206 TACGACGCGTTATCAGAATTATCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAG 1265
                 :||  |  ||    :  :||||  ::|:|    :    :  |  ||      |:||  ||  ::|||:  :  |
Db          1737 UACAAUGCACUUUCAGAGUUAUCGGUGUUAAGGGAGUCUGACAAAUUCGAUGUUGAUGUU 1796

Qy          1266 TTCAAAGACATGTGCAAGGCTTTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTT 1325
                 ::          |  |:|:||  |  |:::  ||  |::      ||            ||||||      |:  |:  |:
Db          1797 UUUUCCCAGAUGUGCCAAUCUUUGGAAGUUGACCCAAUGACGGCAGCGAAGGUUAUAGUC 1856

Qy          1326 GCAGTGGCCGAGAATAGAAGCGGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAAT 1385
                 ||  |:            ||:      |||||:  :  ||:|:  ||  :::||        ||  ||  ||||  |||:
Db          1857 GCGGUCAUGAGCAAUGAGAGCGGUCUGACUCUCACAUUUGAACGACCUACUGAGGCGAAU 1916

Qy          1386 GTGGCTAAGGCTCT------TAAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCG 1439
                 |:  ||      ||:  :          :  ||      |  |||  :|  ||  |    |      :        ::      |
Db          1917 GUUGCGCUAGCUUUACAGGAUCAAGAGAAGGCUUCAGAAGGUGCAUUGGUAGUUACCUCA 1976

Qy          1440 ACATCCGAAGAGGTGAACGTAAATAAATTTTCTATTGCTGAGAAAGGGAGATTGCCTGTG 1499
                 |  |    |  ||  |            |  ||    ::|  |:  ||          ||  |    |            |
Db          1977 AGAGAAGUUGAAGAACCGUCCAUGAAGGGUUCGAUGGCCAGAGGAGAGUUACAAUUAGCU 2036

Qy          1500 TGTGCAGAAAGTCATGGTTTGACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTC 1559
                  |:    |    |  |:  :    |    |        |    |  :      ||  ||  |||||  :  |||:|    :
Db          2037 GGUCUUGCUGGAGAUCAUCCGGAGUCGUCCUAUUCUAAGAACGAGGAGAUAGAGUCUUUA 2096

Qy          1560 AACGATTTCCATAAGGCTTGCGTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTC 1619
                  |  |  ::  ||:|  |||        |  ||:        :  |::      |||||  |:|      :||  ::|:
Db          2097 GAGCAGUUUCAUAUGGCGACGGCAGAUUCGUUAAUUCGUAAGCAGAUGAGCUCGAUUGUG 2156

Qy          1620 TACACTGGCTCACTCAAAGTTCAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCG 1679
                 :||||  ||    |    :  ||||::||  ||||:|||  |||:  :  :  ||  ||    :||  |||  :|
```

```
Db          2157 UACACGGGUCCGAUUAAAGUUCAGCAAAUGAAAAACUUUAUCGAUAGCCUGGUAGCAUCA 2216

Qy          1680 TTGTCCGCCACTGTATCAAATCTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCT 1739
                  :  :|  ||    |  |:  :|  ||:|:      ||||      |:  ||  ||:    ||    |        :||      :
Db          2217 CUAUCUGCUGCGGUGUCGAAUCUCGUCAAGAUCCUCAAAGAUACAGCUGCUAUUGACCUU 2276

Qy          1740 GATTCCAGGGAGAAAGTTGGTGTTTGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCT 1799
                 ||    ||  |    |  ||    ::||  |:  :  |||:|:      |  :    |    |||:||  :    :||||||
Db          2277 GAAACCCGUCAAAAGUUUGGAGUCUUGGAUGUUGCAUCUAGGAAGUGGUUAAUCAAACCA 2336

Qy          1800 GCGGCCAAAGGTCATTCATGGGGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCA 1859
                  |||||||    |:||:  ||:||||  |::|:                    ||    |  ||||                :    ||
Db          2337 ACGGCCAAGAGUCAUGCAUGGGGUGUUGUUGAAACCCACGCGAGGAAGUAUCAUGUGGCG 2396

Qy          1860 CTTCTATCTTATGAAGGAGATAGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTA 1919
                 |::  :        :|:||  |      |    |    :||:|||              ||  :||||  ||  |:  ||:|:
Db          2397 CUUUUGGAAUAUGAUGAGCAGGGUGUGGUGACAUGCGAUGAUUGGAGAAGAGUAGCUGUU 2456

Qy          1920 TCATCTGATACAATGGTATATTCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATG 1979
                    :|:||    |    :  |:  :|::|  ||  |:  ||  ||  |:|    ||  :|:|  |  |  |        :
Db          2457 AGCUCUGAGUCUGUUGUUUAUUCCGACAUGGCGAAACUCAGAACUCUGCGCAGACUGCUU 2516

Qy          1980 AGAGACGGTGAACCCCACGAACCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGT 2039
                  ||  ||||  |||||  ||  |        :|    ||||||  :  |:  |::|:|||  ||  |:  ||  ||
Db          2517 CGAAACGGAGAACCGCAUGUCAGUAGCGCAAAGGUUGUUCUUGUGGACGGAGUUCCGGGC 2576

Qy          2040 TGTGGAAAGTACAAAGGAGATTTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTT 2099
                 :|:|||||      |||||  |    :  ::      ||    ::  |:  ::||:||  ||:  :  |:  ::  |:
Db          2577 UGUGGAAAAACCAAAGAAAUUCUUUCCAGGGUUAAUUUUGAUGAAGAUCUAAUUUUAGUA 2636

Qy          2100 CCTGGAAAACAAGCTGCTGCTATGATCAGAAGAAGGGCTAATTCATCTGGACTGATAAGA 2159
                 ||:||  ||  |||||  ||  |      |:||:||||||||  |  ||  ||::|  :|  ||      :  |:
Db          2637 CCUGGGAAGCAAGCCGCGGAAAUGAUCAGAAGACGUGCGAAUUCCUCAGGGAUUAUUGUG 2696

Qy          2160 GCCACAATGGACAATGTGAGAACGGTAGATTCACTTCTAATGCAT---------CCAAAA 2210
                 |||||  |  ||||||  |:  |  |||  |:  ||::|    :    :  |:|  |:                    |  |
Db          2697 GCCACGAAGGACAACGUUAAAACCGUUGAUUCUUUCAUGAUGAAUUUGGGAAAAGCACA 2756

Qy          2211 CCGCGATCACACAAGAGGCTTTTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTT 2270
                 |    |        |||||||  :  ::  |::||:||||||::||:|  :|||  ||  ||::|:|::
Db          2757 CGCUGUCAGUUCAAGAGGUUAUUCAUUGAUGAAGGGUUGAUGUUGCAUACUGGUUGUGUU 2816

Qy          2271 AACTTCCTGGTGCTTATCTCTGGTTGCGACATCGCATACATTTACGGAGATACACAGCAG 2330
                 ||  ::  |:  |:|      |:  :|        :||||  |:  |||:|    :::||||||||  |||||||||
Db          2817 AAUUUUCUUGUGGCGAUGUCAUUGUGCGAAAUUGCAUAUGUUUACGGAGACACACAGCAG 2876

Qy          2331 ATTCCTTTCATTAACAGAGTTCAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAA 2390
                 |::||  :  ||:  ||  ||||::              ::||||:|  |||      ||::::|    ||    :|  ||
Db          2877 AUUCCAUACAUCAAUAGAGUUUCAGGAUUCCCGUACCCCGCCCAUUUUGCCAAAUUGGAA 2936

Qy          2391 GTGGATGAAGTTGAGATGAGGAGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTC 2450
                 |:  ||  ||  |:  ||||      |  ||  ||  ||  |:    |  :|  ||||    ||:|:  |        ::
Db          2937 GUUGACGAGGUGGAGACACGCAGAACUACUCUCCGUUGUCCAGCCGAUGUCACACAUUAU 2996

Qy          2451 CTACAATCGAAGTACGAAGGAGCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCA 2510
                 |:    |      ||    :|  ||  ||        |:  |    |  |||::|    |  |:    ||      :|  |:  :|
Db          2997 CUGAACAGGAGAUAUGAGGGCUUUGUCAUGAGCACUUCUUCGGUUAAAAAGUCUGUUUCG 3056

Qy          2511 TCTGAGATGATAGGCGGTAAGGGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGGAAA 2570
                    ||||:|  :  |||||        |    |:    :  ||            :  :|  |||||    :    |  ||  ||
Db          3057 CAGGAGAUGGUCGGCGGAGCCGCCGUGAUCAAUCCGAUCUCAAAACCCUUGCAUGGCAAG 3116

Qy          2571 ATTGTAACTTTCACTCAGGCTGATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTG 2630
                 |:    :  ||:::  ||  ||    |  ||:|||        |      :                  |    ||  :|:        |:|:
Db          3117 AUCCUGACUUUUACCCAAUCGGAUAAAGAAGCUCUGCUUUCAAGAGGGUAUUCAGAUGUU 3176

Qy          2631 AACACCGTTCATGAGATCCAAGGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACG 2690
                  ||||  |:  ||:||    :  |||||  ||  ||  :              ||:|:  :|  |:  |:  ||  ::  ||
Db          3177 CACACUGUGCAUGAAGUGCAAGGCGAGACAUACUCUGAUGUUUCACUAGUUAGGUUAACC 3236

Qy          2691 GCAACTCCACTGACTCTGATTTCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGA 2750
                  |  ||  |||  :    |    :  |::  |                    |||  ||:|::  :  |:|||    :|  |  ||
Db          3237 CCUACACCAGUCUCCAUCAUUGCAGGAGACAGCCCACAUGUUUUGGUCGCAUUGUCAAGG 3296
```

```
Qy        2751 CACACAAAGAGCTTCAAATATTACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGT 2810
               |||||        :||| :| :|||| |: |:  : ||:||:::||:    |: |::||
Db        3297 CACACCUGUUCGCUCAAGUACUACACUGUUGUUAUGGAUCCUUUAGUUAGUAUCAUUAGA 3356

Qy        2811 GATTTGTCTTCTTTAAGCTCCTTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGA 2870
               ||: :        : |||:| : | : ::||| |:|:|:|: ||: || ||||| |    |
Db        3357 GAUCUAGAGAAACUUAGCUCGUACUUGUUAGAUAUGUAUAAGGUCGAUGCAGGAACACAA 3416

Qy        2871 TAGCAATTACAGATGGATGCAGTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAA 2930
               :|||||::|||||: ||  | |:|::||||||:   ||:|: :::|: ||| | || ||
Db        3417 UAGCAAUUACAGAUUGACUCGGUGUUCAAAGGUUCCAAUCUUUUUGUUGCAGCGCCAAAG 3476

Qy        2931 TCAGGAGACTTTCCAGATCTACAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACT 2990
                | || ||  :: | ||: : |||:: :| :| ||:   :| |:||| || || || ||
Db        3477 ACUGGUGAUAUUUCUGAUAUGCAGUUUUACUAUGAUAAGUGUCUCCCAGGCAACAGCACC 3536

Qy        2991 ATACTTAACAAGTATGATGCTGTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAG 3050
               |:  : || || : :||:||:|::||||:||||::   :|| | :    : ||:|: ||
Db        3537 AUGAUGAAUAAUUUUGAUGCUGUUACCAUGAGGUUGACUGACAUUUCAUUGAAUGUCAAA 3596

Qy        3051 GATTGTGTTCTTGATTTTTCCAAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTA 3110
               ||::|  :  : ||: : :| ||   : ::|    ||| |||||    |    |   |:|
Db        3597 GAUUGCAUAUUGGAUAUGUCUAAGUCUGUUCGUGCGCCUAAGGAUCAAAUCAAACCACUA 3656

Qy        3111 GAGCCAGTTTTGCGTACCGCGGCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTG 3170
                  ||  :  : || || ||||| |||  |||| |     | ||||:| : |||||: :
Db        3657 AUACCUAUGGUACGAACGGCGGCAGAAAUGCCACGCCAGACUGGACUAUUGGAAAAUUUA 3716

Qy        3171 GTTGCAATGATTAAAAGAAATTTCAACGCACCAGACCTGACGGGGACGATTGACATTGAG 3230
               |: || |:||::|||||||| :: |||||||| ||  :| | || |  |::|| |::||
Db        3717 GUGGCGAUGAUUAAAAGAAACUUUAACGCACCCGAGUUGUCUGGCAUCAUUGAUAUUGAA 3776

Qy        3231 AGCACCGCATCTGTTGTAGTAGATAAGTTTTTTGATAGCTATTTTATTAAAAAAGAAAAA 3290
               |  || |||:|: : |: |:|||:|||::::::::||:|| :|:::  ::||| || ||| |
Db        3777 AAUACUGCAUCUUUGGUUGUAGAUAAGUUUUUUGAUAGUUAUUUGCUUAAAGAAAAAAGA 3836

Qy        3291 TACACAAAAAATATTGCTGGAGTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAAC 3350
                |  |||| || | :| :    :| : |  |  || :|  : |  |||:||:: |||||
Db        3837 AAACCAAAUAAAAAUGUUUCUUUGUUCAGUAGAGAGUCUCUCAAUAGAUGGUUAGAAAAG 3896

Qy        3351 AGGAAAGAAGTACTATTGGACGACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATC 3410
                 | || | |:|  | : | | |  : ||  | :   |::::   ||: :||| ||  :
Db        3897 CAGGAACAGGUAACAAUAGGCCAGCUCGCAGAUUUUGAUUUUGUGGAUUUGCCAGCAGUU 3956

Qy        3411 GATCAGTACAAGCACATGATCAAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAG 3470
               ||:|||:|||  ||||:||: || || |||||| ||||| || | ::||||  ::|||: ||
Db        3957 GAUCAGUACAGACACAUGAUUAAAGCACAACCCAAACAAAAGUUGGACACUUCAAUCCAA 4016

Qy        3471 AATGAATACCCTGCTCTGCAAACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTG 3530
               |  || :|||| ||: :||| || |::|: :||||::| ||  |||:||| |  |: ::
Db        4017 ACGGAGUACCCGGCUUUGCAGACGAUUGUGUACCAUUCAAAAAAGAUCAAUGCAAUAUUC 4076

Qy        3531 GCCGGTTTCT---CAGAGCTTACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTT 3587
               | |   :: :     ||||::|| |||    : |: ||     ::||::| |  |  :::
Db        4077 GGCCCGUUGUUUAGUGAGCUUACUAGGCAAUUACUGGACAGUGUUGAUUCGAGCAGAUUU 4136

Qy        3588 CTTTTCTTTACTAGGAAAACTCCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCG 3647
                : :: :: || || || |||  ||||:: | || :: ::|   ||:|:||||
Db        4137 UUGUUUUUCACAAGAAAGACACCAGCGCAGAUUGAGGAUUUCUUCGGAGAUCUCGACAGU 4196

Qy        3648 CACGTTCCTATGGATGTGTTAGAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAG 3707
               || |: || |:|||:|: :: || |:|||:|: :| || :| || || :| ||||| ||
Db        4197 CAUGUGCCGAUGGAUGUCUUGGAGCUGGAUAUAUCAAAAUACGACAAAUCUCAGAAUGAA 4256

Qy        3708 TTTCATTGTGCTGTAGAGTATGAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCC 3767
               :: || :|:|| |:||| :| || |: :||  ||||::|||: :  | ||  :: ::||
Db        4257 UUCCACUGUGCAGUAGAAUACGAGAUCUGGCGAAGAUUGGGUUUUGAAGACUUCUUGGGA 4316

Qy        3768 GAAGTGTGGAAACAAGGGCACAGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAG 3827
               ||||: :||||||||||||| || || || ||  : |||||::| |  || || |: ||
Db        4317 GAAGUUUGGAAACAAGGGCAUAGAAAGACCACCCUCAAGGAUUAUACCGCAGGUAUAAAA 4376

Qy        3828 ACATGTCTGTGGTATCAAAGGAAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTT 3887
               || :|  : :||:|:||||| || ||||| || |: || || ::||: || || ||:|:
Db        4377 ACUUGCAUCUGGUAUCAAAGAAAGAGCGGGGACGUCACGACGUUCAUUGGAAACACUGUG 4436

Qy        3888 ATAATAGCAGCTTGCTTGGGTTCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTT 3947
               |: |: || || :| ::||  :| |:| : ||||:||| ||  : |: ||||| || :::
Db        4437 AUCAUUGCUGCAUGUUUGGCCUCGAUGCUUCCGAUGGAGAAAAUAAUCAAAGGAGCCUUU 4496

Qy        3948 TGTGGAGACGATTCCGTTTTGTATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCA 4007
               :| || |||||:    :  :|:| :::||||||||::  || :: || ||  : ||
Db        4497 UGCGGUGACGAUAGUCUGCUGUACUUUCCAAAGGGUUGUGAGUUUCCGGAUGUGCAACAC 4556

Qy        4008 TGTGCTAATCTCATGTGGAATTTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTT 4067
               :  || ||:|: |:|:||||::::|| || ||||:|: :| |||   |:| || :||:::
Db        4557 UCCGCGAAUCUUAUGUGGAAUUUUGAAGCAAAACUGUUUAAAAAACAGUAUGGAUACUUU 4616

Qy        4068 TGTGGTAGATACATCATACACCATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAG 4127
               :| || |||:|  : |:||| || || |  |||   |: |:|:|::| ||:||  : |||
Db        4617 UGCGGAAGAUAUGUAAUACAUCACGACAGAGGAUGCAUUGUGUAUUACGAUCCCCUAAAG 4676

Qy        4128 TTGATCTCCAAACTTGGGGCAAAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGG 4187
               ::||:|:| ||||::|| || ||||| |:||||||::  || |||:: || |||:: ||
Db        4677 UUGAUCUCGAAACUUGGUGCUAAACACAUCAAGGAUUGGGAACACUUGGAGGAGUUCAGA 4736

Qy        4188 GTGTCTTTGTGCGATGTTGCTTGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTG 4247
                 |:|: : :| ||:|::||:  ::|| :    |||   :|       :   | ||| :|
Db        4737 AGGUCUCUUUGUGAUGUUGCUGUUUCGUU---GAACAAUUGUGCGUAUUACACACAGUUG 4793

Qy        4248 AACGCAGCTATCAAGGAGGTTCATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGT 4307
                |||  ||: :   |||||::||:|| |||||   :   ||::||:::| :: :||  |:
Db        4794 GACGACGCUGUAUGGGAGGUUCAUAAGACCGCCCCUCCAGGUUCGUUUGUUUAUAAAAGU 4853

Qy        4308 GTTAACAAATTTTTGTGTGATAAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAG 4367
                :    || : :::|: :||:||| :: : :::|||| :::|::: :| |:|||: :
Db        4854 CUGGUGAAGUAUUUGUCUGAUAAAGUUCUUUUUAGAAGUUUGUUUAUAGAUGGCUCUAGU 4913

Qy        4368 TCTCAGAGATACTGTCAAAATTAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACT 4427
               : : | ||  |  |: || |: |  |||:: |: || |: :| |||  |||  |||:  :
Db        4914 UGUUAAAGGAAAAGUGAAUAUCAAUGAGUUUAUCGACCUGUCAAAAAUGGAGAAGAUCUU 4973

Qy        4428 TCCGGCATTCATGACTAAGGTCAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGC 4487
                ||| |  :  : ||    |: |||||:|::|     :|  |  |: || || |: |:||
Db        4974 ACCGUCGAUGUUUACCCCUGUAAAGAGUGUUAUGUGUUCCAAAGUUGAUAAAAUAAUGGU 5033

Qy        4488 TGTTAAGAATGATAGTCTTTCTGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAA 4547
               :  : ||||:||     : :| || |:  |  : |::|||||| |::||| :  :: | |
Db        5034 UCAUGAGAAUGAGUCAUUGUCAGAGGUGAACCUUCUUAAAGGAGUUAAGCUUAUUGAUAG 5093

Qy        4548 AGGGTATGTGTGCTTAGCTGATTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTG 4607
                || :| |: :| ::||| | :::||: |:  | || |||:||||  : || || || :|
Db        5094 UGGAUACGUCUGUUUAGCCGGUUUGGUCGUCACGGGCGAGUGGAACUUGCCUGACAAUUG 5153

Qy        4608 CCGTGGTGGTGTCAGTGTTTGTATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAAC 4667
               | | || ||:|: || |: :|: : |: || || || |:| ||||     | || || ||
Db        5154 CAGAGGAGGUGUGAGCGUGUGUCUGGUGGACAAAAGGAUGGAAAGAGCCGACGAGGCCAC 5213

Qy        4668 GCTGGGTGCGTATCACGCCCCTGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAA 4727
                |: ||  | :|  || |  | ||:   || || |  :::   :: ||| :  : || ||
Db        5214 UCUCGGAUCUUACUACACAGCAGCUGCAAAGAAAAGAUUUCAGUUCAAGGUCGUUCCCAA 5273

Qy        4728 TTATTCAATAACATCCGAGGATGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAA 4787
               ::|: | |:|||  || ||||| ||   |||  ||   :||||||: ::||: ||:|: |
Db        5274 UUAUGCUAUAACCACCCAGGACGCGAUGAAAAACGUCUGGCAAGUUUUAGUUAAUAUUAG 5333

Qy        4788 AGGAGTGGCTATGGAAGAAGGATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGT 4847
               |   |:|   |:|  ||  || : |:|:||  : :|: :|||:: |: :|  : :|: :
Db        5334 AAAUGUGAAGAUGUCAGCGGGUUUCUGUCCGCUUUCUCUGGAGUUUGUGUCGGUGUGUAU 5393

Qy        4848 AGTACATAAAAATAATGTAAGAAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGG 4907
                |:  |:| |||:||: :|| |  |||:::||| ||    |::   |  |:|| ||||||
Db        5394 UGUUUAUAGAAAUAAUAUAAAAUUAGGUUUGAGAGAGAAGAUUACAAACGUGAGAGACGG 5453

Qy        4908 CTCGCCAATTGAACTCACTGAAAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGC 4967
```

```
                 ||| |: ||||: || ||| | |: |::|| |||::| :||| || |: || |:| |
Db       5454 AGGGCCCAUGGAACUUACAGAAGAAGUCGUUGAUGAGUUCAUGGAAGAUGUCCCUAUGUC 5513

Qy       4968 TGTGA 4972
                :  |
Db       5514 GAUCA 5518


RESULT 9
US-08-687-559-2
; Sequence 2, Application US/08687559
; Patent No. 5955647
;  GENERAL INFORMATION:
;    APPLICANT:  Fitchen, John H.
;    APPLICANT:  Beachy, Roger N.
;    TITLE OF INVENTION:  METHOD FOR USING TOBACCO MOSAIC VIRUS TO
;    TITLE OF INVENTION:  OVERPRODUCE PEPTIDES AND PROTEINS
;    NUMBER OF SEQUENCES:  30
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  Fish & Richardson, P.C.
;      STREET:  4225 Executive Square, Suite 1400
;      CITY:  La Jolla
;      STATE:  CA
;      COUNTRY:  US
;      ZIP:  92037
;    COMPUTER READABLE FORM:
;      MEDIUM TYPE:  Diskette
;      COMPUTER:  IBM Compatible
;      OPERATING SYSTEM:  Windows95
;      SOFTWARE:  FastSEQ for Windows Version 2.0
;    CURRENT APPLICATION DATA:
;      APPLICATION NUMBER:  US/08/687,559
;      FILING DATE:  No. 5955647ember 18, 1996
;      CLASSIFICATION:  424
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:  PCT/US95/01467
;      FILING DATE:  03-FEB-1995
;    ATTORNEY/AGENT INFORMATION:
;      NAME:  Learn, June M.
;      REGISTRATION NUMBER:  31,238
;      REFERENCE/DOCKET NUMBER:  07302/011001
;    TELECOMMUNICATION INFORMATION:
;      TELEPHONE:  619-678-5070
;      TELEFAX:  619-678-5099
;   INFORMATION FOR SEQ ID NO:  2:
;    SEQUENCE CHARACTERISTICS:
;      LENGTH:  6395 base pairs
;      TYPE:  nucleic acid
;      STRANDEDNESS:  single
;      TOPOLOGY:  linear
;    MOLECULE TYPE:  Genomic DNA
;    IMMEDIATE SOURCE:
;      CLONE:  TMV
US-08-687-559-2

  Query Match             40.8%;  Score 2031;  DB 2;  Length 6395;
  Best Local Similarity   63.6%;  Pred. No. 0;
  Matches 3169;  Conservative    0;  Mismatches 1795;  Indels   21;  Gaps    4;

Qy          6 AAGGTAATTCCTGAGTTTCAAAGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAA 65
              ||   | | ||  | || |||| ||| || |||| ||||| || ||||||  |||  | ||
Db        537 AAAACAGTCCCCAACTTCCAAAAGGAAGCATTTGACAGATACGCAGAAATTCCTGAAGAC 596

Qy         66 GTCTGCTGCTCTAAAACTTTTCAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGA 125
              |    |||    || ||||| |||      |||   || |||    || |    || |||
Db        597 GCTGTCTGTCACAATACTTTCCAGACAATGCGACATCAGCCGATGCAGCAATCAGGCAGA 656

Qy        126 AGATACGCTGTTGCTCTGCACAGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCG 185
                 || ||  |||| || |||||  | ||||| || || |   ||||||| || || ||
Db        657 GTGTATGCCATTGCGCTACACAGCATATATGACATACCAGCCGATGAGTTCGGGGCGGCA 716

Qy        186 TTAATATCTAAGAATATACATGTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTA 245
               |  |    || ||| | |||   || ||| |||| |   ||  | ||     |  |
Db        717 CTCTTGAGGAAAAATGTCCATACGTGCTATGCCGCTTTCCACTTCTCTGAGAACCTGCTT 776

Qy        246 CTAGACCAGACGGAGGTTACGCTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGAT 305
              || || |   |  | || |   |  | |||||   |||   |||     | || || ||
Db        777 CTTGAAGATTCATACGTCAATTTGGACGAAATCAACGCGTGTTTTTCGCGCGATGGAGAC 836

Qy        306 GATGTTTCTTTTTTCTTTGCTGATGAAAGTACTTTAAATTATAGTCATAAATACAAAAAT 365
               |  |  | ||||  |||||    || |||||| | |||||| |||||| |  ||    |||
Db        837 AAGTTGACCTTTTCTTTTGCATCAGAGAGTACTCTTAATTATTGTCATAGTTATTCTAAT 896

Qy        366 ATCTTGCATTATGTAGTTAAATCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAG 425
              ||  |  | |||||    ||| ||||||| || || |||| ||||   |||||| | |||
Db        897 ATTCTTAAGTATGTGTGCAAAACTTACTTCCCGGCCTCTAATAGAGAGGTTTACATGAAG 956

Qy        426 GAATTTTTAGTCACTAGGGTTAATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTAT 485
              || ||||||||||||| || |||||||| |||||||||||| |||| | | | |||||| | |
Db        957 GAGTTTTTAGTCACCAGAGTTAATACCTGGTTTTGTAAGTTTTCTAGAATAGATACTTTT 1016

Qy        486 ATTCTGTACAAGAGTGTTAGACAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATG 545
               || |||||||  ||||    ||   | |    ||||||||| ||||| |||   || |||
Db       1017 CTTTTGTACAAAGGTGTGGCCCATAAAAGTGTAGATAGTGAGCAGTTTTATACTGCAATG 1076

Qy        546 GAAGACGCCTTTGCTTACAAGAAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTT 605
              |||||||| |    |||||| || ||  | || |||| |||||  || ||    || ||
Db       1077 GAAGACGCATGGCATTACAAAAAGACTCTTGCAATGTGCAACAGCGAGAGAATCCTCCTT 1136

Qy        606 AGAGACACGGCTTCGGTTAACTTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCG 665
                 ||  |  | || || || |  ||||| || || |||| ||| |||||  || ||||| 
Db       1137 GAGGATTCATCATCAGTCAATTACTGGTTTCCCAAAATGAGGGATATGGTCATCGTACCA 1196

Qy        666 CTGTTTGAGGGTTCTATTACCAGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGT 725
               | ||  ||  |||| |    |  |  |||| |||  | |  || ||| | ||
Db       1197 TTATTCGACATTTCTTTGGAGACTAGTAAGAGGACGCGCAAGGAAGTCTTAGTGTCCAAG 1256

Qy        726 GACTTCGTTTACACAGTGCTTAATCATATCAGAACATATCAAGCCAAAGCGTTAACTTAC 785
              || ||||| |  |||||||||||| || ||  ||||||| || | || |||||  | || |||
Db       1257 GATTTCGTGTTTACAGTGCTTAACCACATTCGAACATACCAGGCGAAAGCTCTTACATAC 1316

Qy        786 CAGAACGTATTATCTTTCGTGGAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACT 845
                 || || || || || || || || || ||||  | || || || || ||||| ||
Db       1317 GCAAATGTTTTGTCCTTTGTCGAATCGATTCGATCGAGGGTAATCATTAACGGTGTGACA 1376

Qy        846 GCTAGGTCTGAATGGGATGTAGATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTC 905
              || ||||| ||||||||||| || ||| |  |  | ||| ||||||| ||||| || | |
Db       1377 GCGAGGTCCGAATGGGATGTGGACAAATCTTTGTTACAATCCTTGTCCATGACGTTTTAC 1436

Qy        906 TTGCAGACTAAGCTGGCTGCGCTTCAAGACGATATAGTAATGGGAAAGTTTCGGTGCTTG 965
               |||| |||||||| || | || |  | || ||  || | ||  | |||||| |   |
Db       1437 CTGCATACTAAGCTTGCCGTTCTAAAGGATGACTTACTGATTAGCAAGTTTAGTCTCGGT 1496

Qy        966 GATAAGACCACTTCTGAACTTATTTGGGATGAGGTGGGCAAATTTTTTGGAAACGTTTTC 1025
                 ||  ||   |   | | | | |||||||||| |          ||||| ||||  ||
Db       1497 TCGAAAACGGTGTGCCAGCATGTGTGGGATGAGATTTCGCTGGCGTTTGGGAACGCATTT 1556

Qy       1026 CCCACTATCAAAGAGAGATTGGTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTG 1085
              ||| |  | ||||||||  |  ||| ||||||| || |    ||    |   | ||  |
Db       1557 CCCTCCGTGAAAGAGAGGCTCTTGAACAGGAAACTTATCAGAGTGGCAGGCGACGCATTA 1616

Qy       1086 AAGATCAAGATCCCAGATCTGTATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACC 1145
               |||||| | | || ||||| ||||| || ||   | |||| | || ||  | ||| ||||
Db       1617 GAGATCAGGGTGCCTGATCTATATGTGACCTTCCACGACAGATTAGTGACTGAGTACAAG 1676

Qy       1146 AAGTCTGAGGAGTTACCGCATCTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATG 1205
                 |||| |||  | ||   || || || | |||| |  | |||||| | ||    |||
Db       1677 GCCTCTGTGGACATGCCTGCGCTTGACATTAGGAAGAAGATGGAAGAAACGGAAGTGATG 1736

Qy       1206 TACGACGCGTTATCAGAATTATCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAG 1265
              ||| | ||  | ||||| ||||||  |  | | ||   |||| || |||||| | |
Db       1737 TACAATGCACTTTCAGAGTTATCGGTGTTAAGGGAGTCTGACAAATTCGATGTTGATGTT 1796

Qy       1266 TTCAAAGACATGTGCAAGGCTTTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTT 1325
              ||     | |||||| |  |||| || |||   ||      ||||||    || || ||
Db       1797 TTTTCCCAGATGTGCCAATCTTTGGAAGTTGACCCAATGACGGCAGCGAAGGTTATAGTC 1856
```

```
Qy    1326 GCAGTGGCCGAGAATAGAAGCGGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAAT 1385
           || ||       |||   ||||||| | ||||| || ||||||    || ||| ||||
Db    1857 GCGGTCATGAGCAATGAGAGCGGTCTGACTCTCACATTTGAACGACCTACTGAGGCGAAT 1916

Qy    1386 GTGGCTAAGGCTCT------TAAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCG 1439
           || ||    ||| |       | ||   | ||| || || |  |   |     ||    |
Db    1917 GTTGCGCTAGCTTTACAGGATCAAGAGAAGGCTTCAGAAGGTGCTTTGGTAGTTACCTCA 1976

Qy    1440 ACATCCGAAGAGGTGAACGTAAATAAATTTTCTATTGCTGAGAAAGGGAGATTGCCTGTG 1499
           | |   |  || |         |  ||   ||| || ||      || |  |      |
Db    1977 AGAGAAGTTGAAGAACCGTCCATGAAGGGTTCGATGGCCAGAGGAGAGTTACAATTAGCT 2036

Qy    1500 TGTGCAGAAAGTCATGGTTTGACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTC 1559
            ||   |   |  ||  |  |  |    |  | |   || || ||||| | |||||  |
Db    2037 GGTCTTGCTGGAGATCATCCGGAGTCGTCCTATTCTAAGAACGAGGAGATAGAGTCTTTA 2096

Qy    1560 AACGATTTCCATAAGGCTTGCGTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTC 1619
            |  | || |||| |||    |  |||    | ||   ||||||| |||    ||| ||||
Db    2097 GAGCAGTTTCATATGGCAACGGCAGATTCGTTAATTCGTAAGCAGATGAGCTCGATTGTG 2156

Qy    1620 TACACTGGCTCACTCAAAGTTCAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCG 1679
           ||||| ||  |  | |||||||| |||||||| |||| | | || ||  ||| ||| ||
Db    2157 TACACGGGTCCGATTAAAGTTCAGCAAATGAAAAACTTTATCGATAGCCTGGTAGCATCA 2216

Qy    1680 TTGTCCGCCACTGTATCAAATCTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCT 1739
            | || ||  | || || ||||||   ||||   |  || |||  ||  |    |||   |
Db    2217 CTATCTGCTGCGGTGTCGAATCTCGTCAAGATCCTCAAAGATACAGCTGCTATTGACCTT 2276

Qy    1740 GATTCCAGGGAGAAAGTTGGTGTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCT 1799
           ||  || |  | ||  |||| || | ||||||  | |  |  |||||| |  ||||||| 
Db    2277 GAAACCCGTCAAAAGTTTGGAGTCTTGGATGTTGCATCTAGGAAGTGGTTAATCAAACCA 2336

Qy    1800 GCGGCCAAAGGTCATTCATGGGGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCA 1859
            |||||||  ||||| |||||| ||||| |       ||  | ||||      |   ||
Db    2337 ACGGCCAAGAGTCATGCATGGGGTGTTGTTGAAACCCACGCGAGGAAGTATCATGTGGCG 2396

Qy    1860 CTTCTATCTTATGAAGGAGATAGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTA 1919
           ||| |    ||||| |   |  |  |||||||       || ||||| || || ||||| 
Db    2397 CTTTTGGAATATGATGAGCAGGGTGTGGTGACATGCGATGATTGGAGAAGAGTAGCTGTC 2456

Qy    1920 TCATCTGATACAATGGTATATTCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATG 1979
              |||||  |  | || |||| || || || || ||||  || |||| | | |    |
Db    2457 AGCTCTGAGTCTGTTGTTTATTCCGACATGGCGAAACTCAGAACTCTGCGCAGACTGCTT 2516

Qy    1980 AGAGACGGTGAACCCCACGAACCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGT 2039
            || |||| ||||| || |    ||  |||||| | || ||||||||| || || || ||
Db    2517 CGAAACGGAGAACCGCATGTCAGTAGCGCAAAGGTTGTTCTTGTGGACGGAGTTCCGGGC 2576

Qy    2040 TGTGGAAAGTACAAAGGAGATTTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTT 2099
           ||||| ||   ||||| |  | ||   ||  || || ||||||| ||||| ||| || || 
Db    2577 TGTGGGAAAACCAAAGAAATTCTTTCCAGGGTTAATTTTGATGAAGATCTAATTTTAGTA 2636

Qy    2100 CCTGGAAAACAAGCTGCTGCTATGATCAGAAGAAGGGCTAATTCATCTGGACTGATAAGA 2159
           ||||| || ||||| || |  ||||||||||||| | || ||||| || ||  | ||
Db    2637 CCTGGGAAGCAAGCCGCGGAAATGATCAGAAGACGTGCGAATTCCTCAGGGATTATTGTG 2696

Qy    2160 GCCACAATGGACAATGTGAGAACGGTAGATTCACTTCTAATGCAT---------CCAAAA 2210
           ||||| | |||||| || | ||| || ||||||  |  | ||| ||            | |
Db    2697 GCCACGAAGGACAACGTTAAAACCGTTGATTCTTTCATGATGAATTTTGGGAAAAGCACA 2756

Qy    2211 CCGCGATCACACAAGAGGCTTTTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTT 2270
           |   |      ||||||| | || ||||||||||||||||||| |||| || |||||||||
Db    2757 CGCTGTCAGTTCAAGAGGTTATTCATTGATGAAGGGTTGATGTTGCATACTGGTTGTGTT 2816

Qy    2271 AACTTCCTGGTGCTTATCTCTGGTTGCGACATCGCATACATTTACGGAGATACACAGCAG 2330
           || || || |||   || ||    ||||| || |||||  ||||||||||| |||||||||
Db    2817 AATTTTCTTGTGGCGATGTCATTGTGCGAAATTGCATATGTTTACGGAGACACACAGCAG 2876

Qy    2331 ATTCCTTTCATTAACAGAGTTCAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAA 2390
           ||||| | ||| || ||||||      |||||||| |||   |||||||  ||  || ||
Db    2877 ATTCCATACATCAATAGAGTTTCAGGATTCCCGTACCCCGCCCATTTTGCCAAATTGGAA 2936
```

```
Qy    2391 GTGGATGAAGTTGAGATGAGGAGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTC 2450
           || || || || ||||   | || || || ||  | || ||||  ||||| |    ||
Db    2937 GTTGACGAGGTGGAGACACGCAGAACTACTCTCCGTTGTCCAGCCGATGTCACACATTAT 2996

Qy    2451 CTACAATCGAAGTACGAAGGAGCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCA 2510
           ||  |   ||  || || ||    || |  | ||||||  | ||  ||    || || || 
Db    2997 CTGAACAGGAGATATGAGGGCTTTGTCATGAGCACTTCTTCGGTTAAAAAGTCTGTTTCG 3056

Qy    2511 TCTGAGATGATAGGCGGTAAGGGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGGAAA 2570
              |||||| | |||||    |  ||  | ||     | || |||||  |  | || || 
Db    3057 CAGGAGATGGTCGGCGGAGCCGCCGTGATCAATCCGATCTCAAAACCCTTGCATGGCAAG 3116

Qy    2571 ATTGTAACTTTCACTCAGGCTGATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTG 2630
           ||  | ||||| || ||  | |||||||   |   | |     |  || |||    |||| 
Db    3117 ATCCTGACTTTTACCCAATCGGATAAAGAAGCTCTGCTTTCAAGAGGGTATTCAGATGTT 3176

Qy    2631 AACACCGTTCATGAGATCCAAGGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACG 2690
            |||| || |||||  | ||||| || || |     ||||| || || || || || || 
Db    3177 CACACTGTGCATGAAGTGCAAGGCGAGACATACTCTGATGTTTCACTAGTTAGGTTAACC 3236

Qy    2691 GCAACTCCACTGACTCTGATTTCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGA 2750
            | || ||| |  |  | ||| |         ||| |||||| | |||||  || | || 
Db    3237 CCTACACCAGTCTCCATCATTGCAGGAGACAGCCCACATGTTTTGGTCGCATTGTCAAGG 3296

Qy    2751 CACACAAAGAGCTTCAAATATTACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGT 2810
           |||||        |||| || ||||| || ||  | |||||||||||||    || ||||| 
Db    3297 CACACCTGTTCGCTCAAGTACTACACTGTTGTTATGGATCCTTTAGTTAGTATCATTAGA 3356

Qy    2811 GATTTGTCTTCTTTAAGCTCCTTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGA 2870
           ||| |        | ||||| | | | ||||| ||||||| ||| || ||||| |    |
Db    3357 GATCTAGAGAAACTTAGCTCGTACTTGTTAGATATGTATAAGGTCGATGCAGGAACACAA 3416

Qy    2871 TAGCAATTACAGATGGATGCAGTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAA 2930
           |||||||||||||| ||  | ||||||||||||   ||||| ||||| ||| | || || 
Db    3417 TAGCAATTACAGATTGACTCGGTGTTCAAAGGTTCCAATCTTTTTGTTGCAGCGCCAAAG 3476

Qy    2931 TCAGGAGACTTTCCAGATCTACAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACT 2990
            | || ||  || | ||| | ||||| || ||| || |||   || ||||| || || || 
Db    3477 ACTGGTGATATTTCTGATATGCAGTTTTACTATGATAAGTGTCTCCCAGGCAACAGCACC 3536

Qy    2991 ATACTTAACAAGTATGATGCTGTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAG 3050
           ||  | || || | ||||||||||||||||||||||   ||| | |    | ||||| || 
Db    3537 ATGATGAATAATTTTGATGCTGTTACCATGAGGTTGACTGACATTTCATTGAATGTCAAA 3596

Qy    3051 GATTGTGTTCTTGATTTTTCCAAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTA 3110
           |||||  |  | ||| | || ||   | || |   ||| |||||    |    |   |||
Db    3597 GATTGCATATTGGATATGTCTAAGTCTGTTGCTGCGCCTAAGGATCAAATCAAACCACTA 3656

Qy    3111 GAGCCAGTTTTGCGTACCGCGGCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTG 3170
              ||  |  | || || ||||| |||  |||| |     | |||||| | |||||| | 
Db    3657 ATACCTATGGTACGAACGGCGGCAGAAATGCCACGCCAGACTGGACTATTGGAAAATTTA 3716

Qy    3171 GTTGCAATGATTAAAAGAAATTTCAACGCACCAGACCTGACGGGGACGATTGACATTGAG 3230
           || || |||||||||| || || |||||||| ||  ||  | || |  |||||| ||||| 
Db    3717 GTGGCGATGATTAAAAGGAACTTTAACGCACCCGAGTTGTCTGGCATCATTGATATTGAA 3776

Qy    3231 AGCACCGCATCTGTTGTAGTAGATAAGTTTTTTGATAGCTATTTATTTAAAAAAGAAAAA 3290
           |  || |||||| | || ||||||||||||||||||||| |||||  ||||| || ||| |
Db    3777 AATACTGCATCTTTAGTTGTAGATAAGTTTTTTGATAGTTATTTGCTTAAAGAAAAAAGA 3836

Qy    3291 TACACAAAAAATATTGCTGGAGTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAAC 3350
            |  |||| || | || |    || | |  |  || ||  | |  |||||||| ||||| 
Db    3837 AAACCAAATAAAAATGTTTCTTTGTTCAGTAGAGAGTCTCTCAATAGATGGTTAGAAAAG 3896

Qy    3351 AGGAAAGAAGTACTATTGGACGACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATC 3410
             | || | |||  | | | | |  | ||  | |   ||||||  |||| |||| ||  | 
Db    3897 CAGGAACAGGTAACAATAGGCCAGCTCGCAGATTTTGATTTTGTAGATTTGCCAGCAGTT 3956

Qy    3411 GATCAGTACAAGCACATGATCAAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAG 3470
           ||||||||||  |||||||| || || |||| || || || |||||||||  |||||| || 
Db    3957 GATCAGTACAGACACATGATTAAAGCACAACCCAAGCAAAAATTGGACACTTCAATCCAA 4016

Qy    3471 AATGAATACCCTGCTCTGCAAACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTG 3530
```

```
              |  || ||||| ||| |||| || ||||| |||||||| ||  ||||||| |  || ||
Db       4017 ACGGAGTACCCGGCTTTGCAGACGATTGTGTACCATTCAAAAAAGATCAATGCAATATTT 4076

Qy       3531 GCCGGTTTCT---CAGAGCTTACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTT 3587
              | |   || |     |||||||| |||    | || ||     ||||||| |  |  |||
Db       4077 GGCCCGTTGTTTAGTGAGCTTACTAGGCAATTACTGGACAGTGTTGATTCGAGCAGATTT 4136

Qy       3588 CTTTTCTTTACTAGGAAAACTCCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCG 3647
               | || || || || || || ||||  |||||| | || || |||   |||||||||
Db       4137 TTGTTTTTCACAAGAAAGACACCAGCGCAGATTGAGGATTTCTTCGGAGATCTCGACAGT 4196

Qy       3648 CACGTTCCTATGGATGTGTTAGAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAG 3707
              || || || |||||||| || || |||||||| || || || || || || ||||| ||
Db       4197 CATGTGCCGATGGATGTCTTGGAGCTGGATATATCAAAATACGACAAATCTCAGAATGAA 4256

Qy       3708 TTTCATTGTGCTGTAGAGTATGAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCC 3767
              || || ||||| ||||| || || || |||  |||||||||| |  | || || ||||
Db       4257 TTCCACTGTGCAGTAGAATACGAGATCTGGCGAAGATTGGGTTTTGAAGACTTCTTGGGA 4316

Qy       3768 GAAGTGTGGAAACAAGGGCACAGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAG 3827
              ||||| |||||||||||||| || || || ||  | |||||||| |  || || || ||
Db       4317 GAAGTTTGGAAACAAGGGCATAGAAAGACCACCCTCAAGGATTATACCGCAGGTATAAAA 4376

Qy       3828 ACATGTCTGTGGTATCAAAGGAAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTT 3887
              || ||  | ||||||||||| || ||||| || || || || ||||| || || |||||
Db       4377 ACTTGCATCTGGTATCAAAGAAAGAGCGGGGACGTCACGACGTTCATTGGAAACACTGTG 4436

Qy       3888 ATAATAGCAGCTTGCTTGGGTTCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTT 3947
              || || || || || ||||  || ||| | |||||||| ||  | || ||||| || |||
Db       4437 ATCATTGCTGCATGTTTGGCCTCGATGCTTCCGATGGAGAAAATAATCAAAGGAGCCTTT 4496

Qy       3948 TGTGGAGACGATTCCGTTTTGTATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCA 4007
              || || ||||||    |  |||| |||||||||||||  || || || ||  | ||
Db       4497 TGCGGTGACGATAGTCTGCTGTACTTTCCAAAGGGTTGTGAGTTTCCGGATGTGCAACAC 4556

Qy       4008 TGTGCTAATCTCATGTGGAATTTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTT 4067
              |  || ||||| |||||||||||||| || ||||||| || |||   ||| || ||||||
Db       4557 TCCGCGAATCTTATGTGGAATTTTGAAGCAAAACTGTTTAAAAAACAGTATGGATACTTT 4616

Qy       4068 TGTGGTAGATACATCATACACCATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAG 4127
              || || |||||  | ||||| || || |  |||   || |||||||| ||||||  | |||
Db       4617 TGCGGAAGATATGTAATACATCACGACAGAGGATGCATTGTGTATTACGATCCCCTAAAG 4676

Qy       4128 TTGATCTCCAAACTTGGGGCAAAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGG 4187
              |||||||| |||||||| || ||||| ||||||||||  || ||||| || ||||| ||
Db       4677 TTGATCTCGAAACTTGGTGCTAAACACATCAAGGATTGGGAACACTTGGAGGAGTTCAGA 4736

Qy       4188 GTGTCTTTGTGCGATGTTGCTTGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTG 4247
                |||| | || |||||||||  |||| |    |||   ||       |   | ||| ||
Db       4737 AGGTCTCTTTGTGATGTTGCTGTTTCGTT---GAACAATTGTGCGTATTACACACAGTTG 4793

Qy       4248 AACGCAGCTATCAAGGAGGTTCATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGT 4307
               |||  ||| |   |||||||||||| |||||   |   |||||||||| || |||  ||
Db       4794 GACGACGCTGTATGGGAGGTTCATAAGACCGCCCCTCCAGGTTCGTTTGTTTATAAAAGT 4853

Qy       4308 GTTAACAAATTTTTGTGTGATAAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAG 4367
               |    || | ||||| ||||||| || | ||||||| ||||||| || |||||| |
Db       4854 CTGGTGAAGTATTTGTCTGATAAAGTTCTTTTTAGAAGTTTGTTTATAGATGGCTCTAGT 4913

Qy       4368 TCTCAGAGATACTGTCAAAATTAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACT 4427
              | | | ||  |  || || || |  ||||| || || ||  | |||  |||  ||||  |
Db       4914 TGTTAAAGGAAAAGTGAATATCAATGAGTTTATCGACCTGACAAAAATGGAGAAGATCTT 4973

Qy       4428 TCCGGCATTCATGACTAAGGTCAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGC 4487
               ||| |  |  | ||    || ||||||||||     || |  || || || || ||||
Db       4974 ACCGTCGATGTTTACCCCTGTAAAGAGTGTTATGTGTTCCAAAGTTGATAAAATAATGGT 5033

Qy       4488 TGTTAAGAATGATAGTCTTTCTGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAA 4547
              |  | |||||||     | || || ||  |  | |||||||| |||||| |  || | |
Db       5034 TCATGAGAATGAGTCATTGTCAGAGGTGAACCTTCTTAAAGGAGTTAAGCTTATTGATAG 5093

Qy       4548 AGGGTATGTGTGCTTAGCTGATTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTG 4607
               || || || || ||||| | |||||| ||  | || ||||||||  | || || || ||
Db       5094 TGGATACGTCTGTTTAGCCGGTTTGGTCGTCACGGGCGAGTGGAACTTGCCTGACAATTG 5153

Qy       4608 CCGTGGTGGTGTCAGTGTTTGTATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAAC 4667
              | | || ||||| || || ||| | || || || || ||| ||||     | || || ||
Db       5154 CAGAGGAGGTGTGAGCGTGTGTCTGGTGGACAAAAGGATGGAAAGAGCCGACGAGGCCAC 5213

Qy       4668 GCTGGGTGCGTATCACGCCCCTGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAA 4727
               || ||  | ||  || |  | |||   || || |  |||   || ||| |  | || ||
Db       5214 TCTCGGATCTTACTACACAGCAGCTGCAAAGAAAAGATTTCAGTTCAAGGTCGTTCCCAA 5273

Qy       4728 TTATTCAATAACATCCGAGGATGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAA 4787
              |||| | |||||  || |||| ||   |||  ||   |||||||| ||||| ||||| |
Db       5274 TTATGCTATAACCACCCAGGACGCGATGAAAAACGTCTGGCAAGTTTTAGTTAATATTAG 5333

Qy       4788 AGGAGTGGCTATGGAAGAAGGATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGT 4847
              |   |||   |||  ||  || | ||||||  | ||| ||||||| || ||  | ||| |
Db       5334 AAATGTGAAGATGTCAGCGGGTTTCTGTCCGCTTTCTCTGGAGTTTGTGTCGGTGTGTAT 5393

Qy       4848 AGTACATAAAAATAATGTAAGAAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGG 4907
               ||  ||| ||||||| ||| |  ||||||||| ||    |||   |  |||| ||||||
Db       5394 TGTTTATAGAAATAATATAAAATTAGGTTTGAGAGAGAAGATTACAAACGTGAGAGACGG 5453

Qy       4908 CTCGCCAATTGAACTCACTGAAAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGC 4967
                 ||| || ||||| || ||| | || ||||| |||||| |||| || || || ||| |
Db       5454 AGGGCCCATGGAACTTACAGAAGAAGTCGTTGATGAGTTCATGGAAGATGTCCCTATGTC 5513

Qy       4968 TGTGA 4972
                | |
Db       5514 GATCA 5518


RESULT 10
US-09-401-415-2
; Sequence 2, Application US/09401415
; Patent No. 6503732
;   GENERAL INFORMATION:
;        APPLICANT: THE SCRIPPS RESEARCH INSTITUTE
;        TITLE OF INVENTION: METHOD FOR USING TOBACCO MOSAIC VIRUS TO
;                            OVERPRODUCE PEPTIDES AND PROTEINS
;        NUMBER OF SEQUENCES: 30
;        CORRESPONDENCE ADDRESS:
;             ADDRESSEE: Spensley Horn Jubas & Lubitz
;             STREET: 1880 Century Park East, Suite 500
;             CITY: Los Angeles
;             STATE: California
;             COUNTRY: USA
;             ZIP: 90067
;        COMPUTER READABLE FORM:
;             MEDIUM TYPE: Floppy disk
;             COMPUTER: IBM PC compatible
;             OPERATING SYSTEM: PC-DOS/MS-DOS
;             SOFTWARE: PatentIn Release #1.0, Version #1.25
;        CURRENT APPLICATION DATA:
;             APPLICATION NUMBER: US/09/401,415
;             FILING DATE: 21-Sep-1999
;             CLASSIFICATION: <Unknown>
;        PRIOR APPLICATION DATA:
;             APPLICATION NUMBER: PCT/US95/01467
;             FILING DATE: <Unknown>
;        ATTORNEY/AGENT INFORMATION:
;             NAME: Bostich, June M.
;             REGISTRATION NUMBER: 31,238
;             REFERENCE/DOCKET NUMBER: FD-4074
;        TELECOMMUNICATION INFORMATION:
;             TELEPHONE: (619) 455-5100
;             TELEFAX: (619) 455-5110
;   INFORMATION FOR SEQ ID NO: 2:
;        SEQUENCE CHARACTERISTICS:
;             LENGTH: 6395 base pairs
;             TYPE: nucleic acid
;             STRANDEDNESS: single
;             TOPOLOGY: linear
;        MOLECULE TYPE: DNA (genomic)
```

```
;        IMMEDIATE SOURCE:
;            CLONE: TMV
;        FEATURE:
;            NAME/KEY:  CDS
;            LOCATION:  1..6395
;        SEQUENCE DESCRIPTION: SEQ ID NO: 2:
US-09-401-415-2

  Query Match             40.8%;  Score 2031;  DB 4;  Length 6395;
  Best Local Similarity   63.6%;  Pred. No. 0;
  Matches 3169;  Conservative    0;  Mismatches 1795;  Indels   21;  Gaps    4;

Qy           6 AAGGTAATTCCTGAGTTTCAAAGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAA 65
               ||   | | ||  | || ||| || ||| |||| || ||||||  |||  | ||
Db         537 AAAACAGTCCCCAACTTCCAAAAGGAAGCATTTGACAGATACGCAGAAATTCCTGAAGAC 596

Qy          66 GTCTGCTGCTCTAAAACTTTTCAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGA 125
               |    |||    || ||||| |||      |||   || |||    || |    || |||
Db         597 GCTGTCTGTCACAATACTTTCCAGACAATGCGACATCAGCCGATGCAGCAATCAGGCAGA 656

Qy         126 AGATACGCTGTTGCTCTGCACAGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCG 185
                  || ||  |||| || ||||||  | ||||| || || |   ||||||| || || ||
Db         657 GTGTATGCCATTGCGCTACACAGCATATATGACATACCAGCCGATGAGTTCGGGGCGGCA 716

Qy         186 TTAATATCTAAGAATATACATGTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTA 245
                |  |    || ||| | |||   || ||||| |||| |   ||  | ||     |  |
Db         717 CTCTTGAGGAAAAATGTCCATACGTGCTATGCCGCTTTCCACTTCTCTGAGAACCTGCTT 776

Qy         246 CTAGACCAGACGGAGGTTACGCTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGAT 305
               || ||  |  |  | || |   |  | |||||   ||| |||     | || || ||
Db         777 CTTGAAGATTCATACGTCAATTTGGACGAAATCAACGCGTGTTTTTCGCGCGATGGAGAC 836

Qy         306 GATGTTTCTTTTTTCTTTGCTGATGAAAGTACTTTAAATTATAGTCATAAATACAAAAAT 365
                |  |  | ||||  |||||    || |||||| | |||||| ||||||  ||    |||
Db         837 AAGTTGACCTTTTCTTTTGCATCAGAGAGTACTCTTAATTATTGTCATAGTTATTCTAAT 896

Qy         366 ATCTTGCATTATGTAGTTAAATCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAG 425
               ||  |  | |||||    ||| ||||||| || || |||| ||||   ||||||| | |||
Db         897 ATTCTTAAGTATGTGTGCAAAACTTACTTCCCGGCCTCTAATAGAGAGGTTTACATGAAG 956

Qy         426 GAATTTTTAGTCACTAGGGTTAATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTAT 485
               || ||||||||||| || |||||||| |||||||||||| ||| | | | |||||| | |
Db         957 GAGTTTTTAGTCACCAGAGTTAATACCTGGTTTTGTAAGTTTTCTAGAATAGATACTTTT 1016

Qy         486 ATTCTGTACAAGAGTGTTAGACAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATG 545
                || |||||||  ||||     ||   | |    ||||||||| ||||| |||   || |||
Db        1017 CTTTTGTACAAAGGTGTGGCCCATAAAAGTGTAGATAGTGAGCAGTTTTATACTGCAATG 1076

Qy         546 GAAGACGCCTTTGCTTACAAGAAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTT 605
               |||||||| |    |||||| || ||  | || |||| |||||  || |||    || ||
Db        1077 GAAGACGCATGGCATTACAAAAAGACTCTTGCAATGTGCAACAGCGAGAGAATCCTCCTT 1136

Qy         606 AGAGACACGGCTTCGGTTAACTTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCG 665
                  ||  |  | || || || |  ||||| || || ||||  ||| ||||| || |||||
Db        1137 GAGGATTCATCATCAGTCAATTACTGGTTTCCCAAAATGAGGGATATGGTCATCGTACCA 1196

Qy         666 CTGTTTGAGGGTTCTATTACCAGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGT 725
                | || ||   |||| |    |  |  |||| |||  | |  || ||| | ||
Db        1197 TTATTCGACATTTCTTTGGAGACTAGTAAGAGGACGCGCAAGGAAGTCTTAGTGTCCAAG 1256

Qy         726 GACTTCGTTTACACAGTGCTTAATCATATCAGAACATATCAAGCCAAAGCGTTAACTTAC 785
               || ||||| |  ||||||||||| || || ||||||| || | || |||||  | || |||
Db        1257 GATTTCGTGTTTACAGTGCTTAACCACATTCGAACATACCAGGCGAAAGCTCTTACATAC 1316

Qy         786 CAGAACGTATTATCTTTCGTGGAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACT 845
                  || || || || || ||  || || ||  ||||  | || || || || ||||| ||
Db        1317 GCAAATGTTTTGTCCTTTGTCGAATCGATTCGATCGAGGGTAATCATTAACGGTGTGACA 1376

Qy         846 GCTAGGTCTGAATGGGATGTAGATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTC 905
               || ||||| |||||||||||| || ||| |  |  | ||| ||||||| ||||| || | |
Db        1377 GCGAGGTCCGAATGGGATGTGGACAAATCTTTGTTACAATCCTTGTCCATGACGTTTTAC 1436

Qy         906 TTGCAGACTAAGCTGGCTGCGCTTCAAGACGATATAGTAATGGGAAAGTTTCGGTGCTTG 965
                |||| ||||||||| || |  ||  | || ||  || | ||  | |||||| |   |
Db        1437 CTGCATACTAAGCTTGCCGTTCTAAAGGATGACTTACTGATTAGCAAGTTTAGTCTCGGT 1496

Qy         966 GATAAGACCACTTCTGAACTTATTTGGGATGAGGTGGGCAAATTTTTTGGAAACGTTTTC 1025
                  || ||    |   | | | | |||||||||| |          ||||| ||||  ||
Db        1497 TCGAAAACGGTGTGCCAGCATGTGTGGGATGAGATTTCGCTGGCGTTTGGGAACGCATTT 1556

Qy        1026 CCCACTATCAAAGAGAGATTGGTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTG 1085
               ||| |  | ||||||||  |  ||| |||||| || |    ||    |   | ||  |
Db        1557 CCCTCCGTGAAAGAGAGGCTCTTGAACAGGAAACTTATCAGAGTGGCAGGCGACGCATTA 1616

Qy        1086 AAGATCAAGATCCCAGATCTGTATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACC 1145
                |||||| | | || ||||| ||||| || |   | |||| || ||  ||||| ||||
Db        1617 GAGATCAGGGTGCCTGATCTATATGTGACCTTCCACGACAGATTAGTGACTGAGTACAAG 1676

Qy        1146 AAGTCTGAGGAGTTACCGCATCTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATG 1205
                  |||| |||  | ||    || || || | |||| |  | |||||| |  ||    |||
Db        1677 GCCTCTGTGGACATGCCTGCGCTTGACATTAGGAAGAAGATGGAAGAAACGGAAGTGATG 1736

Qy        1206 TACGACGCGTTATCAGAATTATCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAG 1265
               ||| | ||  | ||||| |||||  |  | | ||   |||| || ||||||| | |
Db        1737 TACAATGCACTTTCAGAGTTATCGGTGTTAAGGGAGTCTGACAAATTCGATGTTGATGTT 1796

Qy        1266 TTCAAAGACATGTGCAAGGCTTTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTT 1325
               ||     | |||||| |  |||| || |||   ||       ||||||     || || ||
Db        1797 TTTTCCCAGATGTGCCAATCTTTGGAAGTTGACCCAATGACGGCAGCGAAGGTTATAGTC 1856

Qy        1326 GCAGTGGCCGAGAATAGAAGCGGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAAT 1385
               || ||       |||   |||||| | |||||| || |||||    || ||  |||| ||||
Db        1857 GCGGTCATGAGCAATGAGAGCGGTCTGACTCTCACATTTGAACGACCTACTGAGGCGAAT 1916

Qy        1386 GTGGCTAAGGCTCT------TAAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCG 1439
               || ||    ||| |      | ||   | ||| || || |  |   |     ||    |
Db        1917 GTTGCGCTAGCTTTACAGGATCAAGAGAAGGCTTCAGAAGGTGCTTTGGTAGTTACCTCA 1976

Qy        1440 ACATCCGAAGAGGTGAACGTAAATAAATTTTCTATTGCTGAGAAAGGGAGATTGCCTGTG 1499
               | |   |  || |        |  ||   |||| || ||      || |  |      |
Db        1977 AGAGAAGTTGAAGAACCGTCCATGAAGGGTTCGATGGCCAGAGGAGAGTTACAATTAGCT 2036

Qy        1500 TGTGCAGAAAGTCATGGTTTGACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTC 1559
                ||   |   |  ||  |  |  |    |  | |   ||  || ||||| | |||||  |
Db        2037 GGTCTTGCTGGAGATCATCCGGAGTCGTCCTATTCTAAGAACGAGGAGATAGAGTCTTTA 2096

Qy        1560 AACGATTTCCATAAGGCTTGCGTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTC 1619
                |  | || |||| |||    |  |||    | ||    ||||| |||    ||| ||||
Db        2097 GAGCAGTTTCATATGGCAACGGCAGATTCGTTAATTCGTAAGCAGATGAGCTCGATTGTG 2156

Qy        1620 TACACTGGCTCACTCAAAGTTCAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCG 1679
               ||||| ||  |  | |||||||| |||||||| |||| | || || ||  ||| || ||| ||
Db        2157 TACACGGGTCCGATTAAAGTTCAGCAAATGAAAAACTTTATCGATAGCCTGGTAGCATCA 2216

Qy        1680 TTGTCCGCCACTGTATCAAATCTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCT 1739
                | || ||  | || || ||||||   ||||   || || |||  ||  |     |||   |
Db        2217 CTATCTGCTGCGGTGTCGAATCTCGTCAAGATCCTCAAAGATACAGCTGCTATTGACCTT 2276

Qy        1740 GATTCCAGGGAGAAAGTTGGTGTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCT 1799
               ||  || |  | ||  |||| || | ||||||  | |  |  |||||| |  |||||||
Db        2277 GAAACCCGTCAAAAGTTTGGAGTCTTGGATGTTGCATCTAGGAAGTGGTTAATCAAACCA 2336

Qy        1800 GCGGCCAAAGGTCATTCATGGGGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCA 1859
                |||||||  ||||| |||||| ||||| ||||       ||  | ||||      |   ||
Db        2337 ACGGCCAAGAGTCATGCATGGGGTGTTGTTGAAACCCACGCGAGGAAGTATCATGTGGCG 2396

Qy        1860 CTTCTATCTTATGAAGGAGATAGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTA 1919
               ||| |    ||||| |   |  |  |||||||       || ||||| || || |||||
Db        2397 CTTTTGGAATATGATGAGCAGGGTGTGGTGACATGCGATGATTGGAGAAGAGTAGCTGTC 2456

Qy        1920 TCATCTGATACAATGGTATATTCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATG 1979
                  |||||  |  | || ||||| || || || || |||  || |||| | |    |
Db        2457 AGCTCTGAGTCTGTTGTTTATTCCGACATGGCGAAACTCAGAACTCTGCGCAGACTGCTT 2516

Qy        1980 AGAGACGGTGAACCCCACGAACCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGT 2039
                || |||| ||||| || |    ||  |||||| | || |||||||| || || || ||
```

```
Db       2517 CGAAACGGAGAACCGCATGTCAGTAGCGCAAAGGTTGTTCTTGTGGACGGAGTTCCGGGC 2576

Qy       2040 TGTGGAAAGTACAAAGGAGATTTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTT 2099
              ||||| ||   ||||| |  | ||   ||  || || ||||||| ||| | || || ||
Db       2577 TGTGGGAAAACCAAAGAAATTCTTTCCAGGGTTAATTTTGATGAAGATCTAATTTTAGTA 2636

Qy       2100 CCTGGAAAACAAGCTGCTGCTATGATCAGAAGAAGGGCTAATTCATCTGGACTGATAAGA 2159
              ||||| || ||||| || |  ||||||||||||| | || ||||| || ||  | ||
Db       2637 CCTGGGAAGCAAGCCGCGGAAATGATCAGAAGACGTGCGAATTCCTCAGGGATTATTGTG 2696

Qy       2160 GCCACAATGGACAATGTGAGAACGGTAGATTCACTTCTAATGCAT---------CCAAAA 2210
              ||||| | ||||||| || | ||| || ||||  |  | ||| ||            | |
Db       2697 GCCACGAAGGACAACGTTAAAACCGTTGATTCTTTCATGATGAATTTTGGGAAAAGCACA 2756

Qy       2211 CCGCGATCACACAAGAGGCTTTTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTT 2270
              |   |      ||||||| | || |||||||||||||||||| |||| || |||||||||
Db       2757 CGCTGTCAGTTCAAGAGGTTATTCATTGATGAAGGGTTGATGTTGCATACTGGTTGTGTT 2816

Qy       2271 AACTTCCTGGTGCTTATCTCTGGTTGCGACATCGCATACATTTACGGAGATACACAGCAG 2330
              || || || |||   || ||    ||||| || |||||  |||||||||| |||||||||
Db       2817 AATTTTCTTGTGGCGATGTCATTGTGCGAAATTGCATATGTTTACGGAGACACACAGCAG 2876

Qy       2331 ATTCCTTTCATTAACAGAGTTCAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAA 2390
              ||||| | ||| || |||||||      |||||||| |||   |||||||   ||  || ||
Db       2877 ATTCCATACATCAATAGAGTTTCAGGATTCCCGTACCCCGCCCATTTTGCCAAATTGGAA 2936

Qy       2391 GTGGATGAAGTTGAGATGAGGAGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTC 2450
              || || || || ||||   | || || || ||  | || ||||  ||||| |    ||
Db       2937 GTTGACGAGGTGGAGACACGCAGAACTACTCTCCGTTGTCCAGCCGATGTCACACATTAT 2996

Qy       2451 CTACAATCGAAGTACGAAGGAGCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCA 2510
              ||  |   ||  || || ||    || |  | ||||||  | ||  ||   || || ||
Db       2997 CTGAACAGGAGATATGAGGGCTTTGTCATGAGCACTTCTTCGGTTAAAAAGTCTGTTTCG 3056

Qy       2511 TCTGAGATGATAGGCGGTAAGGGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGGAAA 2570
                 |||||| | |||||    |  ||  | ||     | || |||||  |  | || ||
Db       3057 CAGGAGATGGTCGGCGGAGCCGCCGTGATCAATCCGATCTCAAAACCCTTGCATGGCAAG 3116

Qy       2571 ATTGTAACTTTCACTCAGGCTGATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTG 2630
              ||  | ||||| || ||  | ||||||   |   |       |  || |||    ||||
Db       3117 ATCCTGACTTTTACCCAATCGGATAAAGAAGCTCTGCTTTCAAGAGGGTATTCAGATGTT 3176

Qy       2631 AACACCGTTCATGAGATCCAAGGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACG 2690
               |||| || |||||  | |||| || || |     ||||| || || || || || ||
Db       3177 CACACTGTGCATGAAGTGCAAGGCGAGACATACTCTGATGTTTCACTAGTTAGGTTAACC 3236

Qy       2691 GCAACTCCACTGACTCTGATTTCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGA 2750
               | || ||| |  |  | ||| |         ||| |||||| | |||||  || | ||
Db       3237 CCTACACCAGTCTCCATCATTGCAGGAGACAGCCCACATGTTTTGGTCGCATTGTCAAGG 3296

Qy       2751 CACACAAAGAGCTTCAAATATTACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGT 2810
              |||||        |||| || ||||| || ||  | ||||||||||||   || |||||
Db       3297 CACACCTGTTCGCTCAAGTACTACACTGTTGTTATGGATCCTTTAGTTAGTATCATTAGA 3356

Qy       2811 GATTTGTCTTCTTTAAGCTCCTTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGA 2870
              ||| |        | ||||| | | | ||||| ||||||| ||| || ||||| |    |
Db       3357 GATCTAGAGAAACTTAGCTCGTACTTGTTAGATATGTATAAGGTCGATGCAGGAACACAA 3416

Qy       2871 TAGCAATTACAGATGGATGCAGTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAA 2930
              |||||||||||||| ||  | ||||||||||||   ||||| ||||| ||| | || ||
Db       3417 TAGCAATTACAGATTGACTCGGTGTTCAAAGGTTCCAATCTTTTTGTTGCAGCGCCAAAG 3476

Qy       2931 TCAGGAGACTTTCCAGATCTACAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACT 2990
               | || ||  || | ||| | ||||| || || |||   || ||||| || || || ||
Db       3477 ACTGGTGATATTTCTGATATGCAGTTTTACTATGATAAGTGTCTCCCAGGCAACAGCACC 3536

Qy       2991 ATACTTAACAAGTATGATGCTGTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAG 3050
              ||  | || || | |||||||||||||||||||||||   ||| | |    | ||||| ||
Db       3537 ATGATGAATAATTTTGATGCTGTTACCATGAGGTTGACTGACATTTCATTGAATGTCAAA 3596

Qy       3051 GATTGTGTTCTTGATTTTTCCAAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTA 3110
              |||||  |  | ||| | ||  ||   | || |   ||| |||||    |    |   |||
Db       3597 GATTGCATATTGGATATGTCTAAGTCTGTTGCTGCGCCTAAGGATCAAATCAAACCACTA 3656
```

```
Qy       3111 GAGCCAGTTTTGCGTACCGCGGCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTG 3170
                 ||  |  | || || ||||| |||  |||| |     | |||||| | |||||| |
Db       3657 ATACCTATGGTACGAACGGCGGCAGAAATGCCACGCCAGACTGGACTATTGGAAAATTTA 3716

Qy       3171 GTTGCAATGATTAAAAGAAATTTCAACGCACCAGACCTGACGGGGACGATTGACATTGAG 3230
              || || ||||||||||| || || |||||||| || ||  || | || |  ||||| |||||
Db       3717 GTGGCGATGATTAAAAGGAACTTTAACGCACCCGAGTTGTCTGGCATCATTGATATTGAA 3776

Qy       3231 AGCACCGCATCTGTTGTAGTAGATAAGTTTTTTGATAGCTATTTTATTAAAAAAGAAAAA 3290
              |  || ||||||| | || ||||||||||||||||||||| ||||  ||||| || ||| |
Db       3777 AATACTGCATCTTTAGTTGTAGATAAGTTTTTTGATAGTTATTTGCTTAAAGAAAAAAGA 3836

Qy       3291 TACACAAAAAATATTGCTGGAGTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAAC 3350
               |  |||| || | || |    || | |  |  || ||  | |  ||||||| ||||| 
Db       3837 AAACCAAATAAAAATGTTTCTTTGTTCAGTAGAGAGTCTCTCAATAGATGGTTAGAAAAG 3896

Qy       3351 AGGAAAGAAGTACTATTGGACGACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATC 3410
                | || | |||  | | | | |  | ||  | |   |||||  |||| ||| ||  |
Db       3897 CAGGAACAGGTAACAATAGGCCAGCTCGCAGATTTTGATTTTGTAGATTTGCCAGCAGTT 3956

Qy       3411 GATCAGTACAAGCACATGATCAAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAG 3470
              ||||||||||  |||||||| || || ||||| || || || |||||||||  |||||| ||
Db       3957 GATCAGTACAGACACATGATTAAAGCACAACCCAAGCAAAAATTGGACACTTCAATCCAA 4016

Qy       3471 AATGAATACCCTGCTCTGCAAACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTG 3530
              |  || ||||| ||| |||| || ||||| |||||||| ||  ||||||| |  || ||
Db       4017 ACGGAGTACCCGGCTTTGCAGACGATTGTGTACCATTCAAAAAAGATCAATGCAATATTT 4076

Qy       3531 GCCGGTTTCT---CAGAGCTTACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTT 3587
              | |   || |     |||||||| |||    | || ||      ||||||| |  |  |||
Db       4077 GGCCCGTTGTTTAGTGAGCTTACTAGGCAATTACTGGACAGTGTTGATTCGAGCAGATTT 4136

Qy       3588 CTTTTCTTTACTAGGAAAACTCCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCG 3647
               | || || || || || ||  ||||  |||||| | || || |||   |||||||||
Db       4137 TTGTTTTTCACAAGAAAGACACCAGCGCAGATTGAGGATTTCTTCGGAGATCTCGACAGT 4196

Qy       3648 CACGTTCCTATGGATGTGTTAGAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAG 3707
              || || || |||||||| || || |||||||| || || || || || || ||||| ||
Db       4197 CATGTGCCGATGGATGTCTTGGAGCTGGATATATCAAAATACGACAAATCTCAGAATGAA 4256

Qy       3708 TTTCATTGTGCTGTAGAGTATGAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCC 3767
              || || ||||| ||||| || || || |||  |||||||||| |  | || || ||||
Db       4257 TTCCACTGTGCAGTAGAATACGAGATCTGGCGAAGATTGGGTTTTGAAGACTTCTTGGGA 4316

Qy       3768 GAAGTGTGGAAACAAGGGCACAGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAG 3827
              ||||| |||||||||||||| || || || ||  | |||||||| |  || || || ||
Db       4317 GAAGTTTGGAAACAAGGGCATAGAAAGACCACCCTCAAGGATTATACCGCAGGTATAAAA 4376

Qy       3828 ACATGTCTGTGGTATCAAAGGAAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTT 3887
              || ||  | ||||||||||| || ||||| || || || || | ||||| || || |||||
Db       4377 ACTTGCATCTGGTATCAAAGAAAGAGCGGGGACGTCACGACGTTCATTGGAAACACTGTG 4436

Qy       3888 ATAATAGCAGCTTGCTTGGGTTCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTT 3947
              || || || || || ||||  || ||| | |||||||| ||  | || ||||| || |||
Db       4437 ATCATTGCTGCATGTTTGGCCTCGATGCTTCCGATGGAGAAAATAATCAAAGGAGCCTTT 4496

Qy       3948 TGTGGAGACGATTCCGTTTTGTATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCA 4007
              || || ||||||    |  |||| ||||||||||||||  || || || ||  | ||
Db       4497 TGCGGTGACGATAGTCTGCTGTACTTTCCAAAGGGTTGTGAGTTTCCGGATGTGCAACAC 4556

Qy       4008 TGTGCTAATCTCATGTGGAATTTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTT 4067
              |  || ||||| |||||||||||||| || ||||||| || |||   ||| || ||||||
Db       4557 TCCGCGAATCTTATGTGGAATTTTGAAGCAAAACTGTTTAAAAAACAGTATGGATACTTT 4616

Qy       4068 TGTGGTAGATACATCATACACCATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAG 4127
              || || |||||  | ||||| || || |  |||   || |||||||| |||||  | |||
Db       4617 TGCGGAAGATATGTAATACATCACGACAGAGGATGCATTGTGTATTACGATCCCCTAAAG 4676

Qy       4128 TTGATCTCCAAACTTGGGGCAAAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGG 4187
              |||||||| |||||||| || ||||  ||||||||||  || ||||| || ||||| ||
Db       4677 TTGATCTCGAAACTTGGTGCTAAACACATCAAGGATTGGGAACACTTGGAGGAGTTCAGA 4736
```

```
Qy        4188 GTGTCTTTGTGCGATGTTGCTTGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTG 4247
                 |||| | || |||||||||  |||| |    |||   ||       |   | ||| ||
Db        4737 AGGTCTCTTTGTGATGTTGCTGTTTCGTT---GAACAATTGTGCGTATTACACACAGTTG 4793

Qy        4248 AACGCAGCTATCAAGGAGGTTCATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGT 4307
                |||  ||| |   |||||||||||| |||||   |   |||||||||| || |||  ||
Db        4794 GACGACGCTGTATGGGAGGTTCATAAGACCGCCCCTCCAGGTTCGTTTGTTTATAAAAGT 4853

Qy        4308 GTTAACAAATTTTTGTGTGATAAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAG 4367
                |    || | ||||| ||||||| || | ||||||| ||||||| || |||||| |
Db        4854 CTGGTGAAGTATTTGTCTGATAAAGTTCTTTTTAGAAGTTTGTTTATAGATGGCTCTAGT 4913

Qy        4368 TCTCAGAGATACTGTCAAAATTAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACT 4427
               | | | ||  |  || || || |  ||||| || || ||  | |||  |||  ||||  |
Db        4914 TGTTAAAGGAAAAGTGAATATCAATGAGTTTATCGACCTGACAAAAATGGAGAAGATCTT 4973

Qy        4428 TCCGGCATTCATGACTAAGGTCAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGC 4487
                ||| |  |  | ||    || ||||||||||     || |  || || || || ||||
Db        4974 ACCGTCGATGTTTACCCCTGTAAAGAGTGTTATGTGTTCCAAAGTTGATAAAATAATGGT 5033

Qy        4488 TGTTAAGAATGATAGTCTTTCTGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAA 4547
               |  | |||||||     | || || ||  |  | |||||||| |||||| |  || | |
Db        5034 TCATGAGAATGAGTCATTGTCAGAGGTGAACCTTCTTAAAGGAGTTAAGCTTATTGATAG 5093

Qy        4548 AGGGTATGTGTGCTTAGCTGATTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTG 4607
                || || || || ||||| | |||||| ||  | || ||||||||  | || || || ||
Db        5094 TGGATACGTCTGTTTAGCCGGTTTGGTCGTCACGGGCGAGTGGAACTTGCCTGACAATTG 5153

Qy        4608 CCGTGGTGGTGTCAGTGTTTGTATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAAC 4667
               | | || ||||| || || ||| | || || || || ||| ||||     | || || ||
Db        5154 CAGAGGAGGTGTGAGCGTGTGTCTGGTGGACAAAAGGATGGAAAGAGCCGACGAGGCCAC 5213

Qy        4668 GCTGGGTGCGTATCACGCCCCTGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAA 4727
                || ||  | ||  || |  | |||   || || |  |||   || ||| |  | || ||
Db        5214 TCTCGGATCTTACTACACAGCAGCTGCAAAGAAAAGATTTCAGTTCAAGGTCGTTCCCAA 5273

Qy        4728 TTATTCAATAACATCCGAGGATGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAA 4787
               |||| | |||||  || |||| ||   |||  ||   |||||||| ||||| ||||| |
Db        5274 TTATGCTATAACCACCCAGGACGCGATGAAAAACGTCTGGCAAGTTTTAGTTAATATTAG 5333

Qy        4788 AGGAGTGGCTATGGAAGAAGGATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGT 4847
               |   |||   |||  ||  || | ||||||  | ||| ||||||| || ||  | ||| |
Db        5334 AAATGTGAAGATGTCAGCGGGTTTCTGTCCGCTTTCTCTGGAGTTTGTGTCGGTGTGTAT 5393

Qy        4848 AGTACATAAAAATAATGTAAGAAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGG 4907
                ||  ||| ||||||| ||| |  ||||||||| ||    |||   |  |||| ||||||
Db        5394 TGTTTATAGAAATAATATAAAATTAGGTTTGAGAGAGAAGATTACAAACGTGAGAGACGG 5453

Qy        4908 CTCGCCAATTGAACTCACTGAAAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGC 4967
                  ||| || ||||| || ||| | || ||||| |||||| |||| || || || ||| |
Db        5454 AGGGCCCATGGAACTTACAGAAGAAGTCGTTGATGAGTTCATGGAAGATGTCCCTATGTC 5513

Qy        4968 TGTGA 4972
                 | |
Db        5514 GATCA 5518
```

```
RESULT 11
US-09-259-741-3
; Sequence 3, Application US/09259741
; Patent No. 6033895
;  GENERAL INFORMATION:
;    APPLICANT:  GARGER, STEPHEN
;    APPLICANT:  HOLTZ, R. BARRY
;    APPLICANT:  McCULLOCH, MICHAEL
;    APPLICANT:  TURPEN, THOMAS
;    TITLE OF INVENTION:  A PROCESS FOR ISOLATING AND
;    TITLE OF INVENTION:  PURIFYING VIRUSES SOLUBLE PROTEINS AND PEPTIDES FROM PLANT
;    TITLE OF INVENTION:  SOURCES
;    NUMBER OF SEQUENCES:  5
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  Howrey & Simon
;      STREET:  1299 Pennsylvania Avenue N.W.
;      CITY:  Washington
;      STATE:  DC
;      COUNTRY:  USA
;      ZIP:  20004
;    COMPUTER READABLE FORM:
;      MEDIUM TYPE:  Diskette
;      COMPUTER:  IBM Compatible
;      OPERATING SYSTEM:  DOS
;      SOFTWARE:  FastSEQ for Windows Version 2.0
;    CURRENT APPLICATION DATA:
;      APPLICATION NUMBER:  US/09/259,741
;      FILING DATE:  February 25, 1999
;      CLASSIFICATION:
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:  09/037,751
;      FILING DATE:  March 10, 1998
;    ATTORNEY/AGENT INFORMATION:
;      NAME:  Halluin, Albert P
;      REGISTRATION NUMBER:  25,277
;      REFERENCE/DOCKET NUMBER:  00801.0140.US01
;    TELECOMMUNICATION INFORMATION:
;      TELEPHONE:  650-463-8100
;      TELEFAX:  650-463-8400
;      TELEX:
;  INFORMATION FOR SEQ ID NO:  3:
;    SEQUENCE CHARACTERISTICS:
;      LENGTH:  6425 base pairs
;      TYPE:  nucleic acid
;      STRANDEDNESS:  single
;      TOPOLOGY:  unknown
;    MOLECULE TYPE:  Genomic RNA
US-09-259-741-3

  Query Match             40.8%;  Score 2031;  DB 3;  Length 6425;
  Best Local Similarity   44.4%;  Pred. No. 0;
  Matches 2212;  Conservative  957;  Mismatches 1795;  Indels   21;  Gaps    4;

Qy           6 AAGGTAATTCCTGAGTTTCAAAGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAA 65
               ||   | : ||  | :: |||| ||| || ::: |||| :| ||||||  :||  | ||
Db         537 AAAACAGUCCCCAACUUCCAAAAGGAAGCAUUUGACAGAUACGCAGAAAUUCCUGAAGAC 596

Qy          66 GTCTGCTGCTCTAAAACTTTTCAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGA 125
               |    |:|    || ||::: |||      |||   || |||    || |    || |||
Db         597 GCUGUCUGUCACAAUACUUUCCAGACAAUGCGACAUCAGCCGAUGCAGCAAUCAGGCAGA 656

Qy         126 AGATACGCTGTTGCTCTGCACAGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCG 185
                  :| ||  ::|| |: |||||  : :|:|| |: || |   |:|||:: || || ||
Db         657 GUGUAUGCCAUUGCGCUACACAGCAUAUAUGACAUACCAGCCGAUGAGUUCGGGGCGGCA 716

Qy         186 TTAATATCTAAGAATATACATGTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTA 245
                :  :    || ||: : ||:   :| :|:|| ||:: |   ::  | ||     :  :
Db         717 CUCUUGAGGAAAAAUGUCCAUACGUGCUAUGCCGCUUUCCACUUCUCUGAGAACCUGCUU 776

Qy         246 CTAGACCAGACGGAGGTTACGCTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGAT 305
               |: ||  |  |  | |: |   :  | ||||:   |||   :::     | || || ||
Db         777 CUUGAAGAUUCAUACGUCAAUUUGGACGAAAUCAACGCGUGUUUUUCGCGCGAUGGAGAC 836

Qy         306 GATGTTTCTTTTTTCTTTGCTGATGAAAGTACTTTAAATTATAGTCATAAATACAAAAAT 365
                |  :  | ::::  :::||    || ||:||: : ||::|: |:||:|  :|    ||:
Db         837 AAGUUGACCUUUUCUUUUGCAUCAGAGAGUACUCUUAAUUAUUGUCAUAGUUAUUCUAAU 896

Qy         366 ATCTTGCATTATGTAGTTAAATCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAG 425
               |:  :  | :|:|:    ||| |::||::  || || :|:| :|||   |:::|| : |||
Db         897 AUUCUUAAGUAUGUGUGCAAAACUUACUUCCCGGCCUCUAAUAGAGAGGUUUACAUGAAG 956

Qy         426 GAATTTTTAGTCACTAGGGTTAATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTAT 485
               || :::::||:||| || |::||:|| :||::::|:|| ::: | | | :|||:|| : :
Db         957 GAGUUUUUAGUCACCAGAGUUAAUACCUGGUUUUGUAAGUUUUCUAGAAUAGAUACUUUU 1016

Qy         486 ATTCTGTACAAGAGTGTTAGACAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATG 545
                :: :|:||||  |:|:    ||   | |    ||:||:|| |||:: :|:   || |:|
Db        1017 CUUUUGUACAAAGGUGUGGCCCAUAAAAGUGUAGAUAGUGAGCAGUUUUAUACUGCAAUG 1076
```

```
Qy        546 GAAGACGCCTTTGCTTACAAGAAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTT 605
              |||||||| :    ::|||| || ||  : || |:|: |||||   || |||   :| ::
Db       1077 GAAGACGCAUGGCAUUACAAAAAGACUCUUGCAAUGUGCAACAGCGAGAGAAUCCUCCUU 1136

Qy        606 AGAGACACGGCTTCGGTTAACTTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCG 665
                 ||  |  | :| |: || :  :||:: || || |:|| ||| |:||: |: |:|||
Db       1137 GAGGAUUCAUCAUCAGUCAAUUACUGGUUUCCCAAAAUGAGGGAUAUGGUCAUCGUACCA 1196

Qy        666 CTGTTTGAGGGTTCTATTACCAGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGT 725
               : :: ||   ::|: :    |  |  |||| |||  | |  || |:| : |:
Db       1197 UUAUUCGACAUUUCUUUGGAGACUAGUAAGAGGACGCGCAAGGAAGUCUUAGUGUCCAAG 1256

Qy        726 GACTTCGTTTACACAGTGCTTAATCATATCAGAACATATCAAGCCAAAGCGTTAACTTAC 785
              ||  ::||: :  ||||:||::|| || |:  |||||:| || || |||||  : || :||
Db       1257 GAUUUCGUGUUUACAGUGCUUAACCACAUUCGAACAUACCAGGCGAAAGCUCUUACAUAC 1316

Qy        786 CAGAACGTATTATCTTTCGTGGAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACT 845
                 || |: :: :| :: |: || :| |:  ||:|  | |: |: |: || ||:|: ||
Db       1317 GCAAAUGUUUUGUCCUUUGUCGAAUCGAUUCGAUCGAGGGUAAUCAUUAACGGUGUGACA 1376

Qy        846 GCTAGGTCTGAATGGGATGTAGATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTC 905
              || |||:| |||:||||:|: || ||| |  :  : ||| ||::|:| |:||| :: : |
Db       1377 GCGAGGUCCGAAUGGGAUGUGGACAAAUCUUUGUUACAAUCCUUGUCCAUGACGUUUUAC 1436

Qy        906 TTGCAGACTAAGCTGGCTGCGCTTCAAGACGATATAGTAATGGAAAGTTTCGGTGCTTG 965
               :||| ||:||||: || |  |:  | || ||  :| : |: .| |||::: |   |
Db       1437 CUGCAUACUAAGCUUGCCGUUCUAAAGGAUGACUUACUGAUUAGCAAGUUUAGUCUCGGU 1496

Qy        966 GATAAGACCACTTCTGAACTTATTTGGGATGAGGTGGGCAAATTTTTTGGAAACGTTTTC 1025
                 || ||    :   | | : : :||||:||| :          :::|| ||||  ::
Db       1497 UCGAAAACGGUGUGCCAGCAUGUGUGGGAUGAGAUUUCGCUGGCGUUUGGAACGCAUUU 1556

Qy       1026 CCCACTATCAAAGAGAGATTGGTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTG 1085
              ||| |  : ||||||||  :  :|| ||||||| :: :    |:    |   | ||  :
Db       1557 CCCUCCGUGAAAGAGAGGCUCUUGAACAGGAAACUUAUCAGAGUGGCAGGCGACGCAUUA 1616

Qy       1086 AAGATCAAGATCCCAGATCTGTATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACC 1145
               |||:|| | : || ||:|: :|:|: || :   | ||||| :: |:  |:|| :|||
Db       1617 GAGAUCAGGGUGCCUGAUCUAUAUGUGACCUUCCACGACAGAUUAGUGACUGAGUACAAG 1676

Qy       1146 AAGTCTGAGGAGTTACCGCATCTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATG 1205
                 :|:| |||  : ||    |: || |: | |||| |  : |||||| | ||    |:|
Db       1677 GCCUCUGUGGACAUGCCUGCGCUUGACAUUAGGAAGAAGAUGGAAGAAACGGAAGUGAUG 1736

Qy       1206 TACGACGCGTTATCAGAATTATCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAG 1265
              :|||  ||  : :|||| ::|:|  :  : | ||   |:|| || ::|||: : |
Db       1737 UACAAUGCACUUUCAGAGUUAUCGGUGUUAAGGGAGUCUGACAAAUUCGAUGUUGAUGUU 1796

Qy       1266 TTCAAAGACATGTGCAAGGCTTTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTT 1325
              ::     | |:|:|| |  |::: || |::   ||      ||||||    |: |: |:
Db       1797 UUUUCCCAGAUGUGCCAAUCUUUGGAAGUUGACCCAAUGACGGCAGCGAAGGUUAUAGUC 1856

Qy       1326 GCAGTGGCCGAGAATAGAAGCGGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAAT 1385
              || |:       ||:   |||||: : ||:|: || :::||.   || || |||| |||:
Db       1857 GCGGUCAUGAGCAAUGAGAGCGGUCUGACUCUCACAUUUGAACGACCUACUGAGGCGAAU 1916

Qy       1386 GTGGCTAAGGCTCT------TAAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCG 1439
              |: ||    ||: :      : ||   | ||| :| || |  |   :     ::   .|
Db       1917 GUUGCGCUAGCUUUACAGGAUCAAGAGAAGGCUUCAGAAGGUGCUUUGGUAGUUACCUCA 1976

Qy       1440 ACATCCGAAGAGGTGAACGTAAATAAATTTTCTATTGCTGAGAAAGGGAGATTGCCTGTG 1499
              | |   |  || |        |  ||   ::| |: ||      || |  |      |
Db       1977 AGAGAAGUUGAAGAACCGUCCAUGAAGGGUUCGAUGGCCAGAGGAGAGUUACAAUUAGCU 2036

Qy       1500 TGTGCAGAAAGTCATGGTTTGACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTC 1559
               |:   |   |  |:  :  |  |    |  | :   || || ||||| : |||:|  :
Db       2037 GGUCUUGCUGGAGAUCAUCCGGAGUCGUCCUAUUCUAAGAACGAGGAGAUAGAGUCUUUA 2096

Qy       1560 AACGATTTCCATAAGGCTTGCGTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTC 1619
               |  | :: ||:| |||    |  ||:    : |::   ||||| |:|   :|| ::|:
Db       2097 GAGCAGUUUCAUAUGGCAACGGCAGAUUCGUUAAUUCGUAAGCAGAUGAGCUCGAUUGUG 2156

Qy       1620 TACACTGGCTCACTCAAAGTTCAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCG 1679
```

```
              :|||| ||  |  : ||||::|| ||||:||| |||: : : || ||  :|| ||| :|
Db       2157 UACACGGGUCCGAUUAAAGUUCAGCAAAUGAAAAACUUUAUCGAUAGCCUGGUAGCAUCA 2216

Qy       1680 TTGTCCGCCACTGTATCAAATCTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCT 1739
               : :| ||  | |: :| ||:|:   ||||   |: || ||:  ||  |    :||   :
Db       2217 CUAUCUGCUGCGGUGUCGAAUCUCGUCAAGAUCCUCAAAGAUACAGCUGCUAUUGACCUU 2276

Qy       1740 GATTCCAGGGAGAAAGTTGGTGTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCT 1799
              ||  || |  ||  ::|| |: : |||:|:  | :  |  |||:|| :  :||||||
Db       2277 GAAACCCGUCAAAAGUUUGGAGUCUUGGAUGUUGCAUCUAGGAAGUGGUUAAUCAAACCA 2336

Qy       1800 GCGGCCAAAGGTCATTCATGGGGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCA 1859
               |||||||  |:||: ||:|||| |::|:        ||  | ||||      :   ||
Db       2337 ACGGCCAAGAGUCAUGCAUGGGGUGUUGUUGAAACCCACGCGAGGAAGUAUCAUGUGGCG 2396

Qy       1860 CTTCTATCTTATGAAGGAGATAGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTA 1919
              |:: :    :|:|| |   |  |  :||:|||       || :|||| || |: ||:|:
Db       2397 CUUUUGGAAUAUGAUGAGCAGGGUGUGGUGACAUGCGAUGAUUGGAGAAGAGUAGCUGUC 2456

Qy       1920 TCATCTGATACAATGGTATATTCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATG 1979
                 :|:||  |  : |: :|::| || |: || || |:|  || :|:| | | |    :
Db       2457 AGCUCUGAGUCUGUUGUUUAUUCCGACAUGGCGAAACUCAGAACUCUGCGCAGACUGCUU 2516

Qy       1980 AGAGACGGTGAACCCCACGAACCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGT 2039
               || |||| ||||| || |    :|  |||||| : |: |::|:||| || |: || ||
Db       2517 CGAAACGGAGAACCGCAUGUCAGUAGCGCAAAGGUUGUUCUUGUGGACGGAGUUCCGGGC 2576

Qy       2040 TGTGGAAAGTACAAAGGAGATTTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTT 2099
              :|:|| ||   ||||| |  : ::   ||  :: |: ::||:|| ||: : |: :: |:
Db       2577 UGUGGGAAAACCAAAGAAAUUCUUUCCAGGGUUAAUUUUGAUGAAGAUCUAAUUUUAGUA 2636

Qy       2100 CCTGGAAAACAAGCTGCTGCTATGATCAGAAGAAGGGCTAATTCATCTGGACTGATAAGA 2159
              ||:|| || ||||| || |  |:||:||||||| | || ||::| :| ||  : |:
Db       2637 CCUGGGAAGCAAGCCGCGGAAAUGAUCAGAAGACGUGCGAAUUCCUCAGGGAUUAUUGUG 2696

Qy       2160 GCCACAATGGACAATGTGAGAACGGTAGATTCACTTCTAATGCAT---------CCAAAA 2210
              ||||| | |||||| |: | ||| |: ||::|  :  : |:| |:            | |
Db       2697 GCCACGAAGGACAACGUUAAAACCGUUGAUUCUUUCAUGAUGAAUUUUGGGAAAAGCACA 2756

Qy       2211 CCGCGATCACACAAGAGGCTTTTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTT 2270
              |   |      ||||||| : :: |::||:||||||::||:| :||| || ||::|:|::
Db       2757 CGCUGUCAGUUCAAGAGGUUAUUCAUUGAUGAAGGGUUGAUGUUGCAUACUGGUUGUGUU 2816

Qy       2271 AACTTCCTGGTGCTTATCTCTGGTTGCGACATCGCATACATTTACGGAGATACACAGCAG 2330
              || :: |: |:|   |: :|    :|||| |: |||:|  :::||||||| |||||||||
Db       2817 AAUUUUCUUGUGGCGAUGUCAUUGUGCGAAAUUGCAUAUGUUUACGGAGACACACAGCAG 2876

Qy       2331 ATTCCTTTCATTAACAGAGTTCAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAA 2390
              |::|| : ||: || ||||::      ::||||:| |||   ||::::|  ||  :| ||
Db       2877 AUUCCAUACAUCAAUAGAGUUUCAGGAUUCCCGUACCCCGCCCAUUUUGCCAAAUUGGAA 2936

Qy       2391 GTGGATGAAGTTGAGATGAGGAGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTC 2450
              |: || || |: ||||   | || || || |:  | :| ||||  ||:|: |    ::
Db       2937 GUUGACGAGGUGGAGACACGCAGAACUACUCUCCGUUGUCCAGCCGAUGUCACACAUUAU 2996

Qy       2451 CTACAATCGAAGTACGAAGGAGCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCA 2510
              |:  |   ||  :| || ||    |: |  | |||::|  | |:  ||   :| |: :|
Db       2997 CUGAACAGGAGAUAUGAGGGCUUUGUCAUGAGCACUUCUUCGGUUAAAAAGUCUGUUUCG 3056

Qy       2511 TCTGAGATGATAGGCGGTAAGGGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGAAA 2570
                 ||||:| : |||||    |  |:  : ||     : :| |||||  :  | || ||
Db       3057 CAGGAGAUGGUCGGCGGAGCCGCCGUGAUCAAUCCGAUCUCAAAACCCUUGCAUGGCAAG 3116

Qy       2571 ATTGTAACTTTCACTCAGGCTGATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTG 2630
              |:  : ||::: || ||  | ||:|||   |   :       |  || :|:    |:|:
Db       3117 AUCCUGACUUUUACCCAAUCGGAUAAAGAAGCUCUGCUUUCAAGAGGGUAUUCAGAUGUU 3176

Qy       2631 AACACCGTTCATGAGATCCAAGGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACG 2690
               |||| |: ||:||  : ||||| || || :     ||:|: :| |: |: || :: ||
Db       3177 CACACUGUGCAUGAAGUGCAAGGCGAGACAUACUCUGAUGUUUCACUAGUUAGGUUAACC 3236

Qy       2691 GCAACTCCACTGACTCTGATTTCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGA 2750
               | || ||| :  |  : |:: |         ||| ||:|:: :  |:|||  :| | ||
```

```
Db   3237 CCUACACCAGUCUCCAUCAUUGCAGGAGACAGCCCACAUGUUUUGGUCGCAUUGUCAAGG 3296

Qy   2751 CACACAAAGAGCTTCAAATATTACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGT 2810
          |||||        :||| :| :|||| |: |:  : ||:||:::||:    |: |::||
Db   3297 CACACCUGUUCGCUCAAGUACUACACUGUUGUUAUGGAUCCUUUAGUUAGUAUCAUUAGA 3356

Qy   2811 GATTTGTCTTCTTTAAGCTCCTTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGA 2870
          ||: :        : |||:| : | : ::||| |:|:|:|: ||: || ||||| |    |
Db   3357 GAUCUAGAGAAACUUAGCUCGUACUUGUUAGAUAUGUAUAAGGUCGAUGCAGGAACACAA 3416

Qy   2871 TAGCAATTACAGATGGATGCAGTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAA 2930
          :|||||::|||||: ||  | |:|::||||||:   ||:|: :::|: ||| | || ||
Db   3417 UAGCAAUUACAGAUUGACUCGGUGUUCAAAGGUUCCAAUCUUUUUGUUGCAGCGCCAAAG 3476

Qy   2931 TCAGGAGACTTTCCAGATCTACAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACT 2990
           | || ||  :: | ||: : |||:: :| :| ||:   :| |:||| || || || ||
Db   3477 ACUGGUGAUAUUUCUGAUAUGCAGUUUUACUAUGAUAAGUGUCUCCCAGGCAACAGCACC 3536

Qy   2991 ATACTTAACAAGTATGATGCTGTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAG 3050
          |:  : || || : :||:||:|::||||:||||::   :|| | :    : ||:|: ||
Db   3537 AUGAUGAAUAAUUUUGAUGCUGUUACCAUGAGGUUGACUGACAUUUCAUUGAAUGUCAAA 3596

Qy   3051 GATTGTGTTCTTGATTTTTCCAAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTA 3110
          ||::|  :  : ||: : :| ||   : :: |   ||| |||||    |    |   |:|
Db   3597 GAUUGCAUAUUGGAUAUGUCUAAGUCUGUUGCUGCGCCUAAGGAUCAAAUCAAACCACUA 3656

Qy   3111 GAGCCAGTTTTGCGTACCGCGGCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTG 3170
             ||  :  : || || ||||| |||  ||||| |     | ||||:| : |||||: :
Db   3657 AUACCUAUGGUACGAACGGCGGCAGAAAUGCCACGCCAGACUGGACUAUUGGAAAAUUUA 3716

Qy   3171 GTTGCAATGATTAAAAGAAATTTCAACGCACCAGACCTGACGGGGACGATTGACATTGAG 3230
          |: || |:||::||||| || :: |||||||| ||  :| | || |  |::|| |::||
Db   3717 GUGGCGAUGAUUAAAAGGAACUUUAACGCACCCGAGUUGUCUGGCAUCAUUGAUAUUGAA 3776

Qy   3231 AGCACCGCATCTGTTGTAGTAGATAAGTTTTTTGATAGCTATTTTATTAAAAAAGAAAAA 3290
          |  || |||:|: : |: |:|||:|||::::::||:|| :|:::  ::||| || ||| |
Db   3777 AAUACUGCAUCUUUAGUUGUAGAUAAGUUUUUUGAUAGUUAUUUGCUUAAAGAAAAAAGA 3836

Qy   3291 TACACAAAAAATATTGCTGGAGTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAAC 3350
           |  |||| || | :| :    :| : |  |  || :|  : |  |||:||:: |||||
Db   3837 AAACCAAAUAAAAAUGUUUCUUUGUUCAGUAGAGAGUCUCUCAAUAGAUGGUUAGAAAAG 3896

Qy   3351 AGGAAAGAAGTACTATTGGACGACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATC 3410
            | || | |:|  | : | | |  : ||  | :   |::::  |||: :||| ||  :
Db   3897 CAGGAACAGGUAACAAUAGGCCAGCUCGCAGAUUUUGAUUUUGUAGAUUUGCCAGCAGUU 3956

Qy   3411 GATCAGTACAAGCACATGATCAAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAG 3470
          ||:|||:|||  ||||:||: || || |||||| || || |||::||||  ::|||: ||
Db   3957 GAUCAGUACAGACACAUGAUUAAAGCACAACCCAAGCAAAAAUUGGACACUUCAAUCCAA 4016

Qy   3471 AATGAATACCCTGCTCTGCAAACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTG 3530
          |  || :||||| ||: :||| || |::|: :||||::| ||  |||:||| |  |: ::
Db   4017 ACGGAGUACCCGGCUUUGCAGACGAUUGUGUACCAUUCAAAAAAGAUCAAUGCAAUAUUU 4076

Qy   3531 GCCGGTTTCT---CAGAGCTTACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTT 3587
          | |   :: :     ||||::|| |||    : |: ||     ::||::| |  |  :::
Db   4077 GGCCCGUUGUUUAGUGAGCUUACUAGGCAAUUACUGGACAGUGUUGAUUCGAGCAGAUUU 4136

Qy   3588 CTTTTCTTTACTAGGAAAACTCCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCG 3647
           : :: :: || || || || ||||  ||||:: | || :: ::|   ||:|:||||
Db   4137 UUGUUUUUCACAAGAAAGACACCAGCGCAGAUUGAGGAUUUCUUCGGAGAUCUCGACAGU 4196

Qy   3648 CACGTTCCTATGGATGTGTTAGAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAG 3707
          || |: || |:|||:|: :: || |:|||:|: :| || :| || || :| ||||| ||
Db   4197 CAUGUGCCGAUGGAUGUCUUGGAGCUGGAUAUAUCAAAAUACGACAAAUCUCAGAAUGAA 4256

Qy   3708 TTTCATTGTGCTGTAGAGTATGAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCC 3767
          :: || :|:|| |:||| :| || |: :||  ||||::|||: :  | || :: ::||
Db   4257 UUCCACUGUGCAGUAGAAUACGAGAUCUGGCGAAGAUUGGGUUUUGAAGACUUCUUGGGA 4316

Qy   3768 GAAGTGTGGAAACAAGGGCACAGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAG 3827
          ||||: :||||||||||||| || || || ||  : |||||::| |  || || |: ||
Db   4317 GAAGUUUGGAAACAAGGGCAUAGAAAGACCACCCUCAAGGAUUAUACCGCAGGUAUAAAA 4376

Qy   3828 ACATGTCTGTGGTATCAAAGGAAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTT 3887
          || :|  : :||:|:||||| || ||||| || |: || || ::||: || ||:|:
Db   4377 ACUUGCAUCUGGUAUCAAAGAAAGAGCGGGGACGUCACGACGUUCAUUGGAAACACUGUG 4436

Qy   3888 ATAATAGCAGCTTGCTTGGGTTCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTT 3947
          |: |: || || :| ::||  :| |:| : ||||:||| ||  : |: ||||| || :::
Db   4437 AUCAUUGCUGCAUGUUUGGCCUCGAUGCUUCCGAUGGAGAAAAUAAUCAAAGGAGCCUUU 4496

Qy   3948 TGTGGAGACGATTCCGTTTTGTATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCA 4007
          :| || |||||:    :  :|:| :::|||||||::  || :: || ||   : ||
Db   4497 UGCGGUGACGAUAGUCUGCUGUACUUUCCAAAGGGUUGUGAGUUUCCGGAUGUGCAACAC 4556

Qy   4008 TGTGCTAATCTCATGTGGAATTTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTT 4067
          :  || ||:|: |:|:||||::::|| || ||||:|: :| |||   |:| || :||:::
Db   4557 UCCGCGAAUCUUAUGUGGAAUUUUGAAGCAAAACUGUUUAAAAAACAGUAUGGAUACUUU 4616

Qy   4068 TGTGGTAGATACATCATACACCATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAG 4127
          :| || |||:|  : |:||| || || |  |||   |: |:|:|::| ||:||  : |||
Db   4617 UGCGGAAGAUAUGUAAUACAUCACGACAGAGGAUGCAUUGUGUAUUACGAUCCCCUAAAG 4676

Qy   4128 TTGATCTCCAAACTTGGGGCAAAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGG 4187
          ::||:|:| ||||::|| || ||||| |:||||||::  || |||:: || |||:: ||
Db   4677 UUGAUCUCGAAACUUGGUGCUAAACACAUCAAGGAUUGGGAACACUUGGAGGAGUUCAGA 4736

Qy   4188 GTGTCTTTGTGCGATGTTGCTTGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTG 4247
            |:|: : :| ||:|::||:  ::|| :    |||   :|       :   | ||| :|
Db   4737 AGGUCUCUUUGUGAUGUUGCUGUUUCGUU---GAACAAUUGUGCGUAUUACACACAGUUG 4793

Qy   4248 AACGCAGCTATCAAGGAGGTTCATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGT 4307
           |||  ||: :   |||||::||:|| |||||   :   ||::||:::| :: :||  |:
Db   4794 GACGACGCUGUAUGGGAGGUUCAUAAGACCGCCCCUCCAGGUUCGUUUGUUUAUAAAAGU 4853

Qy   4308 GTTAACAAATTTTTGTGTGATAAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAG 4367
           :    || : :::|: :||:||| :: : :::|||| :::|::: :| |:|||: :
Db   4854 CUGGUGAAGUAUUUGUCUGAUAAAGUUCUUUUUAGAAGUUUGUUUAUAGAUGGCUCUAGU 4913

Qy   4368 TCTCAGAGATACTGTCAAAATTAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACT 4427
          : : | ||  |  |: || |: |  |||:: |: || |:  | |||  |||  |||:  :
Db   4914 UGUUAAAGGAAAAGUGAAUAUCAAUGAGUUUAUCGACCUGACAAAAAUGGAGAAGAUCUU 4973

Qy   4428 TCCGGCATTCATGACTAAGGTCAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGC 4487
           ||| |  :  : ||    |: |||||:|::|     :|  |  |: || || |: |:||
Db   4974 ACCGUCGAUGUUUACCCCUGUAAAGAGUGUUAUGUGUUCCAAAGUUGAUAAAAUAAUGGU 5033

Qy   4488 TGTTAAGAATGATAGTCTTTCTGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAA 4547
          :  : ||||:||     : :| || |:  |  : |::|||| |::||| :  :: | |
Db   5034 UCAUGAGAAUGAGUCAUUGUCAGAGGUGAACCUUCUUAAAGGAGUUAAGCUUAUUGAUAG 5093

Qy   4548 AGGGTATGTGTGCTTAGCTGATTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTG 4607
           || :| |: :| ::||| | :::||: |:   | || |||:||||  : || || || :|
Db   5094 UGGAUACGUCUGUUUAGCCGGUUUGGUCGUCACGGGCGAGUGGAACUUGCCUGACAAUUG 5153

Qy   4608 CCGTGGTGGTGTCAGTGTTTGTATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAAC 4667
          | | || ||:|: || |: :|: : |: || || ||  |:| ||||      | || || ||
Db   5154 CAGAGGAGGUGUGAGCGUGUGUCUGGUGGACAAAAGGAUGGAAAGAGCCGACGAGGCCAC 5213

Qy   4668 GCTGGGTGCGTATCACGCCCCTGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAA 4727
           |: ||  | :|  || |  | ||:   || || |  :::   :: ||| :  : || ||
Db   5214 UCUCGGAUCUUACUACACAGCAGCUGCAAAGAAAAGAUUUCAGUUCAAGGUCGUUCCCAA 5273

Qy   4728 TTATTCAATAACATCCGAGGATGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAA 4787
          ::|: | |:|||  || ||| | ||   |||  ||   :||||||: ::||: ||:|: |
Db   5274 UUAUGCUAUAACCACCCAGGACGCGAUGAAAAACGUCUGGCAAGUUUUAGUUAAUAUUAG 5333

Qy   4788 AGGAGTGGCTATGGAAGAAGGATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGT 4847
          |   |:|   |:|  ||  || : |:|:||  : :|: :||||:: |: :|  : :|: :
Db   5334 AAAUGUGAAGAUGUCAGCGGGUUUCUGUCCGCUUUCUCUGGAGUUUGUGUCGGUGUGUAU 5393

Qy   4848 AGTACATAAAAATAATGTAAGAAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGG 4907
           |:  |:| |||:||: :|| |  |||:::||| ||    |::   |  |:|| ||||||
Db   5394 UGUUUAUAGAAAUAAUAUAAAAUUAGGUUUGAGAGAGAAGAUUACAAACGUGAGAGACGG 5453
```

```
Qy       4908 CTCGCCAATTGAACTCACTGAAAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGC 4967
                 `||| |: ||||: || ||| | |: |::|| |||::| :||| || |: || |:| |
Db       5454 AGGGCCCAUGGAACUUACAGAAGAAGUCGUUGAUGAGUUCAUGGAAGAUGUCCCUAUGUC 5513

Qy       4968 TGTGA 4972
                : |
Db       5514 GAUCA 5518


RESULT 12
US-09-037-751-3
; Sequence 3, Application US/09037751
; Patent No. 6037456
;  GENERAL INFORMATION:
;    APPLICANT:  GARGER, STEPHEN
;    APPLICANT:  HOLTZ, R. BARRY
;    APPLICANT:  McCULLOCH, MICHAEL
;    APPLICANT:  TURPEN, THOMAS
;    TITLE OF INVENTION:  A PROCESS FOR ISOLATING AND
;    TITLE OF INVENTION:  PURIFYING VIRUSES SOLUBLE PROTEINS AND PEPTIDES
;    TITLE OF INVENTION:  FROM PLANT SOURCES
;    NUMBER OF SEQUENCES:  5
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  Howrey & Simon
;      STREET:  1299 Pennsylvania Avenue N.W.
;      CITY:  Washington
;      STATE:  DC
;      COUNTRY:  USA
;      ZIP:  20004
;    COMPUTER READABLE FORM:
;      MEDIUM TYPE:  Diskette
;      COMPUTER:  IBM Compatible
;      OPERATING SYSTEM:  DOS
;      SOFTWARE:  FastSEQ for Windows Version 2.0
;    CURRENT APPLICATION DATA:
;      APPLICATION NUMBER:  US/09/037,751
;      FILING DATE:  10-MAR-1998
;      CLASSIFICATION:
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:
;      FILING DATE:
;    ATTORNEY/AGENT INFORMATION:
;      NAME:  Halluin, Albert P
;      REGISTRATION NUMBER:  25,277
;      REFERENCE/DOCKET NUMBER:  00801.0140.999
;    TELECOMMUNICATION INFORMATION:
;      TELEPHONE:  650-463-8109
;      TELEFAX:  650-463-8400
;      TELEX:
;  INFORMATION FOR SEQ ID NO:  3:
;    SEQUENCE CHARACTERISTICS:
;      LENGTH:  6425 base pairs
;      TYPE:  nucleic acid
;      STRANDEDNESS:  single
;      TOPOLOGY:  unknown
;    MOLECULE TYPE:  Genomic RNA
US-09-037-751-3

  Query Match             40.8%;  Score 2031;  DB 3;  Length 6425;
  Best Local Similarity   44.4%;  Pred. No. 0;
  Matches 2212;  Conservative  957;  Mismatches 1795;  Indels   21;  Gaps    4;

Qy          6 AAGGTAATTCCTGAGTTTCAAAGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAA 65
              ||   | : ||  | :: |||| ||| || ::: |||| :| ||||||   :||   | ||
Db        537 AAAACAGUCCCCAACUUCCAAAAGGAAGCAUUUGACAGAUACGCAGAAAUUCCUGAAGAC 596

Qy         66 GTCTGCTGCTCTAAAACTTTTCAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGA 125
              |    |:|     || ||::: |||         |||   || |||     || |    || |||
Db        597 GCUGUCUGUCACAAUACUUUCCAGACAAUGCGACAUCAGCCGAUGCAGCAAUCAGGCAGA 656

Qy        126 AGATACGCTGTTGCTCTGCACAGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCG 185
                 :| ||  ::|| |: |||||  : :|:|| |: || |   |:|||:: || || ||
Db        657 GUGUAUGCCAUUGCGCUACACAGCAUAUAUGACAUACCAGCCGAUGAGUUCGGGGCGGCA 716

Qy        186 TTAATATCTAAGAATATACATGTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTA 245
               :  :      || ||: : ||:    :| :|:|| ||:: |    :: | ||      :  :
Db        717 CUCUUGAGGAAAAAUGUCCAUACGUGCUAUGCCGCUUUCCACUUCUCUGAGAACCUGCUU 776

Qy        246 CTAGACCAGACGGAGGTTACGCTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGAT 305
              |: ||  |   |   | |: |    :  | ||||:    |||    :::     | || || ||
Db        777 CUUGAAGAUUCAUACGUCAAUUUGGACGAAAUCAACGCGUGUUUUUCGCGCGAUGGAGAC 836

Qy        306 GATGTTTCTTTTTTCTTTGCTGATGAAAGTACTTTAAATTATAGTCATAAATACAAAAAT 365
               |  :  | ::::  :::||      || ||:||: : ||::|: |:||:|  :|      ||:
Db        837 AAGUUGACCUUUUCUUUUGCAUCAGAGAGUACUCUUAAUUAUUGUCAUAGUUAUUCUAAU 896

Qy        366 ATCTTGCATTATGTAGTTAAATCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAG 425
              |:  :  | :|:|:      ||| |::||:: || || :|:| :|||    |:::|| : |||
Db        897 AUUCUUAAGUAUGUGUGCAAAACUUACUUCCCGGCCUCUAAUAGAGAGGUUUACAUGAAG 956

Qy        426 GAATTTTTAGTCACTAGGGTTAATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTAT 485
              ||  :::::||:||| || |::||:|| :||::::|:||  ::: | | | :|||:|| : :
Db        957 GAGUUUUUAGUCACCAGAGUUAAUACCUGGUUUUGUAAGUUUUCUAGAAUAGAUACUUUU 1016

Qy        486 ATTCTGTACAAGAGTGTTAGACAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATG 545
               :: :|:||||  |:|:       ||    | |      ||:||:|| |||:: :|:    || |:|
Db       1017 CUUUUGUACAAAGGUGUGGCCCAUAAAAGUGUAGAUAGUGAGCAGUUUUAUACUGCAAUG 1076

Qy        546 GAAGACGCCTTTGCTTACAAGAAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTT 605
              |||||||| :     ::||||·|| ||   : || |:|: |||||  || |||      :| ::
Db       1077 GAAGACGCAUGGCAUUACAAAAAGACUCUUGCAAUGUGCAACAGCGAGAGAAUCCUCCUU 1136

Qy        606 AGAGACACGGCTTCGGTTAACTTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCG 665
                 ||  |  | :| |: || :   :||:: || || |:|| ||| |:||: |: |:|||
Db       1137 GAGGAUUCAUCAUCAGUCAAUUACUGGUUUCCCAAAAUGAGGGAUAUGGUCAUCGUACCA 1196

Qy        666 CTGTTTGAGGGTTCTATTACCAGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGT 725
               : :: ||   ::|: :      |  |  |||| |||   |  |   || |:|  : |:
Db       1197 UUAUUCGACAUUUCUUUGGAGACUAGUAAGAGGACGCGCAAGGAAGUCUUAGUGUCCAAG 1256

Qy        726 GACTTCGTTTACACAGTGCTTAATCATATCAGAACATATCAAGCCAAAGCGTTAACTTAC 785
              ||  ::||: :   ||||:||::|| || |:   |||||:| || || |||||    : || :||
Db       1257 GAUUUCGUGUUUACAGUGCUUAACCACAUUCGAACAUACCAGGCGAAAGCUCUUACAUAC 1316

Qy        786 CAGAACGTATTATCTTTCGTGGAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACT 845
                 || |: :: :| :: |: || :| |:   ||:|   | |: |: |: || ||:|: ||
Db       1317 GCAAAUGUUUUGUCCUUUGUCGAAUCGAUUCGAUCGAGGGUAAUCAUUAACGGUGUGACA 1376

Qy        846 GCTAGGTCTGAATGGGATGTAGATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTC 905
              || |||:| |||:||||:|: || ||| |    :    :  ||| ||::|:| |:||| :: : |
Db       1377 GCGAGGUCCGAAUGGGAUGUGGACAAAUCUUUGUUACAAUCCUUGUCCAUGACGUUUUAC 1436

Qy        906 TTGCAGACTAAGCTGGCTGCGCTTCAAGACGATATAGTAATGGGAAAGTTTCGGTGCTTG 965
               :||| ||:||||: || |   |:   | || ||    :| : |:   | |||::: |     |
Db       1437 CUGCAUACUAAGCUUGCCGUUCUAAAGGAUGACUUACUGAUUAGCAAGUUUAGUCUCGGU 1496

Qy        966 GATAAGACCACTTCTGAACTTATTTGGGATGAGGTGGGCAAATTTTTTGGAAACGTTTTC 1025
                 || ||     :    | | : : :||||:|||  :            :::|| ||||   ::
Db       1497 UCGAAAACGGUGUGCCAGCAUGUGUGGGAUGAGAUUUCGCUGGCGUUUGGAACGCAUUU 1556

Qy       1026 CCCACTATCAAAGAGAGATTGGTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTG 1085
              ||| |   : ||||||||    :   :|| ||||||| :: :     |:      |    | ||   :
Db       1557 CCCUCCGUGAAAGAGAGGCUCUUGAACAGGAAACUUAUCAGAGUGGCAGGCGACGCAUUA 1616

Qy       1086 AAGATCAAGATCCCAGATCTGTATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACC 1145
                |||:|| | : || ||:|: :|:|: || :     | ||||| :: |:   |:|| :|||
Db       1617 GAGAUCAGGGUGCCUGAUCUAUAUGUGACCUUCCACGACAGAUUAGUGACUGAGUACAAG 1676

Qy       1146 AAGTCTGAGGAGTTACCGCATCTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATG 1205
                  :|:| ||| : ||     |: || |: | |||| |   : |||||| | ||     |:|
Db       1677 GCCUCUGUGGACAUGCCUGCGCUUGACAUUAGGAAGAAGAUGGAAGAAACGGAAGUGAUG 1736

Qy       1206 TACGACGCGTTATCAGAATTATCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAG 1265
               :|| | ||   : :||||  ::|:|   :   : | ||    |:|| || ::|||: :  |
Db       1737 UACAAUGCACUUUCAGAGUUAUCGGUGUUAAGGGAGUCUGACAAAUUCGAUGUUGAUGUU 1796
```

```
Qy          1266 TTCAAAGACATGTGCAAGGCTTTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTT 1325
                 ::     | |:|:|| |  |::: || |::   ||      ||||||    |: |: |:
Db          1797 UUUUCCCAGAUGUGCCAAUCUUUGGAAGUUGACCCAAUGACGGCAGCGAAGGUUAUAGUC 1856

Qy          1326 GCAGTGGCCGAGAATAGAAGCGGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAAT 1385
                 || |:       ||:   |||||: : ||:|: || :::||    || || |||| |||:
Db          1857 GCGGUCAUGAGCAAUGAGAGCGGUCUGACUCUCACAUUUGAACGACCUACUGAGGCGAAU 1916

Qy          1386 GTGGCTAAGGCTCT------TAAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCG 1439
                 |: ||    ||: :      : ||   | ||| :| || |  |   :     ::    |
Db          1917 GUUGCGCUAGCUUUACAGGAUCAAGAGAAGGCUUCAGAAGGUGCUUUGGUAGUUACCUCA 1976

Qy          1440 ACATCCGAAGAGGTGAACGTAAATAAATTTTCTATTGCTGAGAAAGGAGATTGCCTGTG 1499
                 | |   |  || |        |  ||   ::| |: ||      || |  |      |
Db          1977 AGAGAAGUUGAAGAACCGUCCAUGAAGGGUUCGAUGGCCAGAGGAGAGUUACAAUUAGCU 2036

Qy          1500 TGTGCAGAAAGTCATGGTTTGACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTC 1559
                  |:   |   |  |:  :  |  |    |  | :   || || ||||| : |||:|  :
Db          2037 GGUCUUGCUGGAGAUCAUCCGGAGUCGUCCUAUUCUAAGAACGAGGAGAUAGAGUCUUUA 2096

Qy          1560 AACGATTTCCATAAGGCTTGCGTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTC 1619
                  |  | :: ||:| |||    |  ||:    : |::   ||||| |:|   :|| ::|:
Db          2097 GAGCAGUUUCAUAUGGCAACGGCAGAUUCGUUAAUUCGUAAGCAGAUGAGCUCGAUUGUG 2156

Qy          1620 TACACTGGCTCACTCAAAGTTCAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCG 1679
                 :|||| ||  |  : ||||::|| ||||:||| |||: : : || ||  :|| ||| :|
Db          2157 UACACGGGUCCGAUUAAAGUUCAGCAAAUGAAAAACUUUAUCGAUAGCCUGGUAGCAUCA 2216

Qy          1680 TTGTCCGCCACTGTATCAAATCTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCT 1739
                  : :| ||  | |: :| ||:|:   ||||   |: || ||:  ||  |    :||   :
Db          2217 CUAUCUGCUGCGGUGUCGAAUCUCGUCAAGAUCCUCAAAGAUACAGCUGCUAUUGACCUU 2276

Qy          1740 GATTCCAGGGAGAAAGTTGGTGTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCT 1799
                 ||  || |  | ||  ::|| |: : ||:|:  | :   |  |||:|| :  :||||||
Db          2277 GAAACCCGUCAAAAGUUUGGAGUCUUGGAUGUUGCAUCUAGGAAGUGGUUAAUCAAACCA 2336

Qy          1800 GCGGCCAAAGGTCATTCATGGGGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCA 1859
                  |||||||  |:||: ||:|||| |::|:        ||  | ||||      :   ||
Db          2337 ACGGCCAAGAGUCAUGCAUGGGGUGUUGUUGAAACCCACGCGAGGAAGUAUCAUGUGGCG 2396

Qy          1860 CTTCTATCTTATGAAGGAGATAGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTA 1919
                 |:: :    :|:|| |   |  |  :||:|||       || :|||| || |: ||:|:
Db          2397 CUUUUGGAAUAUGAUGAGCAGGGUGUGGUGACAUGCGAUGAUUGGAGAAGAGUAGCUGUC 2456

Qy          1920 TCATCTGATACAATGGTATATTCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATG 1979
                    :|:||  |  : |: :|::| || |: || || |:|  || :|:| | | |    :
Db          2457 AGCUCUGAGUCUGUUGUUUAUUCCGACAUGGCGAAACUCAGAACUCUGCGCAGACUGCUU 2516

Qy          1980 AGAGACGGTGAACCCCACGAACCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGT 2039
                  || |||| ||||| || |    :|  |||||| : |: |::|:||| || |: || ||
Db          2517 CGAAACGGAGAACCGCAUGUCAGUAGCGCAAAGGUUGUUCUUGUGGACGGAGUUCCGGGC 2576

Qy          2040 TGTGGAAAGTACAAAGGAGATTTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTT 2099
                 :|:|| ||   ||||| |  : ::   ||  :: |: ::||:|| ||: : |: :: |:
Db          2577 UGUGGGAAAACCAAAGAAAUUCUUUCCAGGGUUAAUUUUGAUGAAGAUCUAAUUUUAGUA 2636

Qy          2100 CCTGGAAAACAAGCTGCTGCTATGATCAGAAGAAGGGCTAATTCATCTGGACTGATAAGA 2159
                 ||:|| || ||||| || |  |:||:||||||| | || ||::| :| ||  : |:
Db          2637 CCUGGGAAGCAAGCCGCGGAAAUGAUCAGAAGACGUGCGAAUUCCUCAGGGAUUAUUGUG 2696

Qy          2160 GCCACAATGGACAATGTGAGAACGGTAGATTCACTTCTAATGCAT---------CCAAAA 2210
                 ||||| | |||||| |: | ||| |: ||::|  :  : |:| |:            | |
Db          2697 GCCACGAAGGACAACGUUAAAACCGUUGAUUCUUUCAUGAUGAAUUUUGGGAAAAGCACA 2756

Qy          2211 CCGCGATCACACAAGAGGCTTTTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTT 2270
                 |   |      ||||||| : :: |::||:||||||::||:| :||| || ||::|:|::
Db          2757 CGCUGUCAGUUCAAGAGGUUAUUCAUUGAUGAAGGGUUGAUGUUGCAUACUGGUUGUGUU 2816

Qy          2271 AACTTCCTGGTGCTTATCTCTGGTTGCGACATCGCATACATTTACGGAGATACACAGCAG 2330
                 || :: |: |:|   |: :|   .:|||| |: |||:|  :::||||||| |||||||||
Db          2817 AAUUUUCUUGUGGCGAUGUCAUUGUGCGAAAUUGCAUAUGUUUACGGAGACACACAGCAG 2876

Qy          2331 ATTCCTTTCATTAACAGAGTTCAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAA 2390
```

```
                 |::|| : ||: || ||||::      ::||||:| |||   ||::::|  ||  :| ||
Db          2877 AUUCCAUACAUCAAUAGAGUUUCAGGAUUCCCGUACCCCGCCCAUUUUGCCAAAUUGGAA 2936

Qy          2391 GTGGATGAAGTTGAGATGAGGAGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTC 2450
                 |: || || |: ||||   | || || || |:  | :| ||||  ||:|: |    ::
Db          2937 GUUGACGAGGUGGAGACACGCAGAACUACUCUCCGUUGUCCAGCCGAUGUCACACAUUAU 2996

Qy          2451 CTACAATCGAAGTACGAAGGAGCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCA 2510
                 |:  |   ||  :| || ||    |: |  | |||::|  | |:  ||   :| |: :|
Db          2997 CUGAACAGGAGAUAUGAGGGCUUUGUCAUGAGCACUUCUUCGGUUAAAAAGUCUGUUUCG 3056

Qy          2511 TCTGAGATGATAGGCGGTAAGGGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGAAA 2570
                    ||||:| : |||||    |  |:  : ||     : :| |||||  :  | || ||
Db          3057 CAGGAGAUGGUCGGCGGAGCCGCCGUGAUCAAUCCGAUCUCAAAACCCUUGCAUGGCAAG 3116

Qy          2571 ATTGTAACTTTCACTCAGGCTGATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTG 2630
                 |:  : ||::: || ||  |  ||:|||   |   :       |  || :|:    |:|:
Db          3117 AUCCUGACUUUUACCCAAUCGGAUAAAGAAGCUCUGCUUUCAAGAGGGUAUUCAGAUGUU 3176

Qy          2631 AACACCGTTCATGAGATCCAAGGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACG 2690
                  |||| |: ||:|   : ||||| || || :     ||:|: :| |: |: || :: ||
Db          3177 CACACUGUGCAUGAAGUGCAAGGCGAGACAUACUCUGAUGUUUCACUAGUUAGGUUAACC 3236

Qy          2691 GCAACTCCACTGACTCTGATTTCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGA 2750
                  | || ||| :  |  : |:: |         ||| ||:|:: : |:|||  :| | ||
Db          3237 CCUACACCAGUCUCCAUCAUUGCAGGAGACAGCCCACAUGUUUUGGUCGCAUUGUCAAGG 3296

Qy          2751 CACACAAAGAGCTTCAAATATTACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGT 2810
                 |||||        :||| :| :|||| |: |:  : ||:||:::||:    |: |::||
Db          3297 CACACCUGUUCGCUCAAGUACUACACUGUUGUUAUGGAUCCUUUAGUUAGUAUCAUUAGA 3356

Qy          2811 GATTTGTCTTCTTTAAGCTCCTTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGA 2870
                 ||: :        : |||:| : | : ::||| |:|:|:| ||: || ||||| |    |
Db          3357 GAUCUAGAGAAACUUAGCUCGUACUUGUUAGAUAUGUAUAAGGUCGAUGCAGGAACACAA 3416

Qy          2871 TAGCAATTACAGATGGATGCAGTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAA 2930
                 :|||||::|||||: ||  | |:|::||||||:   ||:|: :::|: ||| | || ||
Db          3417 UAGCAAUUACAGAUUGACUCGGUGUUCAAAGGUUCCAAUCUUUUUGUUGCAGCGCCAAAG 3476

Qy          2931 TCAGGAGACTTTCCAGATCTACAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACT 2990
                  | || ||  :: | ||: : |||:: :| :| ||:   :| |:||| || || || ||
Db          3477 ACUGGUGAUAUUUCUGAUAUGCAGUUUUACUAUGAUAAGUGUCUCCCAGGCAACAGCACC 3536

Qy          2991 ATACTTAACAAGTATGATGCTGTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAG 3050
                 |:  : || || : :||:||:|::||||:||||::   :|| | :    : ||:|: ||
Db          3537 AUGAUGAAUAAUUUUGAUGCUGUUACCAUGAGGUUGACUGACAUUUCAUUGAAUGUCAAA 3596

Qy          3051 GATTGTGTTCTTGATTTTTCCAAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTA 3110
                 ||::|  :  : ||: : :| ||   : :: |   ||| |||||    |    |   |:|
Db          3597 GAUUGCAUAUUGGAUAUGUCUAAGUCUGUUGCUGCGCCUAAGGAUCAAAUCAAACCACUA 3656

Qy          3111 GAGCCAGTTTTGCGTACCGCGGCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTG 3170
                    ||  :  : || || ||||| |||  |||| |     | ||||:| : |||||: :
Db          3657 AUACCUAUGGUACGAACGGCGGCAGAAAUGCCACGCCAGACUGGACUAUUGGAAAAUUUA 3716

Qy          3171 GTTGCAATGATTAAAAGAAATTTCAACGCACCAGACCTGACGGGGACGATTGACATTGAG 3230
                 |: || |:||::||||| || :: |||||||| ||  :| | || |  |::|| |::||
Db          3717 GUGGCGAUGAUUAAAAGGAACUUUAACGCACCCGAGUUGUCUGGCAUCAUUGAUAUUGAA 3776

Qy          3231 AGCACCGCATCTGTTGTAGTAGATAAGTTTTTGATAGCTATTTATTAAAAAAGAAAAA 3290
                 |  || |||:|: : |: |:|||:|||::::::||:|| :|:::  ::||| || ||| |
Db          3777 AAUACUGCAUCUUUAGUUGUAGAUAAGUUUUUUGAUAGUUAUUUGCUUAAAGAAAAAAGA 3836

Qy          3291 TACACAAAAAATATTGCTGGAGTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAAC 3350
                  |  |||| || | :| :    :| : |  |  || :|  : |  |||:||:: |||||
Db          3837 AAACCAAAUAAAAAUGUUUCUUUGUUCAGUAGAGAGUCUCUCAAUAGAUGGUUAGAAAAG 3896

Qy          3351 AGGAAAGAAGTACTATTGGACGACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATC 3410
                    | || | |:|  |: |  | |  : ||  | :   |::::  |||: :||| ||   :
Db          3897 CAGGAACAGGUAACAAUAGGCCAGCUCGCAGAUUUUGAUUUUGUAGAUUUGCCAGCAGUU 3956

Qy          3411 GATCAGTACAAGCACATGATCAAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAG 3470
                 ||:|||:|||   ||||:||: || || ||||| || || |||::||||  ::|||: ||
```

```
Db          3957 GAUCAGUACAGACACAUGAUUAAAGCACAACCCAAGCAAAAAUUGGACACUUCAAUCCAA 4016

Qy          3471 AATGAATACCCTGCTCTGCAAACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTG 3530
                 |  || :|||| ||: :||| || |::|: :||||::| ||  |||:||| |  |: ::
Db          4017 ACGGAGUACCCGGCUUUGCAGACGAUUGUGUACCAUUCAAAAAAGAUCAAUGCAAUAUUU 4076

Qy          3531 GCCGGTTTCT---CAGAGCTTACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTT 3587
                 | |   :: :     ||||::|| |||    : |: ||     ::||::| |  |  :::
Db          4077 GGCCCGUUGUUUAGUGAGCUUACUAGGCAAUUACUGGACAGUGUUGAUUCGAGCAGAUUU 4136

Qy          3588 CTTTTCTTTACTAGGAAAACTCCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCG 3647
                  : :: :: || || || || ||||  ||||:: | || :: ::|   ||:|:||||
Db          4137 UUGUUUUUCACAAGAAAGACACCAGCGCAGAUUGAGGAUUUCUUCGGAGAUCUCGACAGU 4196

Qy          3648 CACGTTCCTATGGATGTGTTAGAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAG 3707
                 || |: || |:|||:|: :: || |:|||:|: :| || :| || || :| ||||| ||
Db          4197 CAUGUGCCGAUGGAUGUCUUGGAGCUGGAUAUAUCAAAAUACGACAAAUCUCAGAAUGAA 4256

Qy          3708 TTTCATTGTGCTGTAGAGTATGAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCC 3767
                 :: || :|:|| |:||| :| || |: :||  ||||::|||: :  | || :: ::||
Db          4257 UUCCACUGUGCAGUAGAAUACGAGAUCUGGCGAAGAUUGGGUUUUGAAGACUUCUUGGGA 4316

Qy          3768 GAAGTGTGGAAACAAGGGCACAGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAG 3827
                 ||||: :||||||||||||| || || || ||  : |||||::| |  || || |: ||
Db          4317 GAAGUUUGGAAACAAGGGCAUAGAAAGACCACCCUCAAGGAUUAUACCGCAGGUAUAAAA 4376

Qy          3828 ACATGTCTGTGGTATCAAAGGAAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTT 3887
                 || :|  : :||:|:||||| || ||||| || |: || || ::||: || || ||:|:
Db          4377 ACUUGCAUCUGGUAUCAAAGAAAGAGCGGGGACGUCACGACGUUCAUUGGAAACACUGUG 4436

Qy          3888 ATAATAGCAGCTTGCTTGGGTTCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTT 3947
                 |: |: || || :| ::||  :| |:| : ||||:||| ||  : |: ||||| || :::
Db          4437 AUCAUUGCUGCAUGUUUGGCCUCGAUGCUUCCGAUGGAGAAAAUAAUCAAAGGAGCCUUU 4496

Qy          3948 TGTGGAGACGATTCCGTTTTGTATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCA 4007
                 :| || |||||:    :  :|:| :::||||||||::  || :: || ||  : ||
Db          4497 UGCGGUGACGAUAGUCUGCUGUACUUUCCAAAGGGUUGUGAGUUUCCGGAUGUGCAACAC 4556

Qy          4008 TGTGCTAATCTCATGTGGAATTTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTT 4067
                 :  || ||:|: |:|:||||::::|| || ||||:|: :| |||   |:| || :||:::
Db          4557 UCCGCGAAUCUUAUGUGGAAUUUUGAAGCAAAACUGUUUAAAAAACAGUAUGGAUACUUU 4616

Qy          4068 TGTGGTAGATACATCATACACCATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAG 4127
                 :| || |||:|  : |:||| || || |  |||   |: |:|:|::| ||:||  : |||
Db          4617 UGCGGAAGAUAUGUAAUACAUCACGACAGAGGAUGCAUUGUGUAUUACGAUCCCCUAAAG 4676

Qy          4128 TTGATCTCCAAACTTGGGGCAAAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGG 4187
                 ::||:|:| ||||::|| || ||||| |:||||||::  || |||:: || |||:: ||
Db          4677 UUGAUCUCGAAACUUGGUGCUAAACACAUCAAGGAUUGGGAACACUUGGAGGAGUUCAGA 4736

Qy          4188 GTGTCTTTGTGCGATGTTGCTTGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTG 4247
                   |:|: : :| ||:|::||: |::|| :    |||   :|       :   | ||| :|
Db          4737 AGGUCUCUUUGUGAUGUUGCUGUUUCGUU---GAACAAUUGUGCGUAUUACACACAGUUG 4793

Qy          4248 AACGCAGCTATCAAGGAGGTTCATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGT 4307
                  |||  ||: :   |||||::||:|| |||||   :   ||::||:::| :: :||  |:
Db          4794 GACGACGCUGUAUGGGAGGUUCAUAAGACCGCCCCUCCAGGUUCGUUUGUUUAUAAAAGU 4853

Qy          4308 GTTAACAAATTTTTGTGTGATAAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAG 4367
                  :    || : :::|: :||:||| :: : :::|||| :::|::: :| |:|||: :
Db          4854 CUGGUGAAGUAUUUGUCUGAUAAAGUUCUUUUUAGAAGUUUGUUUAUAGAUGGCUCUAGU 4913

Qy          4368 TCTCAGAGATACTGTCAAAATTAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACT 4427
                 : :  | || |  |: || |: |  |||:: |: || |:  | |||  |||  |||:  :
Db          4914 UGUUAAAGGAAAAGUGAAUAUCAAUGAGUUUAUCGACCUGACAAAAAUGGAGAAGAUCUU 4973

Qy          4428 TCCGGCATTCATGACTAAGGTCAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGC 4487
                  ||| |  :  : ||    |: |||||:|::|     :| |  |: || || |: |:||
Db          4974 ACCGUCGAUGUUUACCCCUGUAAAGAGUGUUAUGUGUUCCAAAGUUGAUAAAAUAAUGGU 5033

Qy          4488 TGTTAAGAATGATAGTCTTTCTGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAA 4547
                 :  : ||||:||     : :| || |:  |  : |::|||||| |::||| :  :: | |
Db          5034 UCAUGAGAAUGAGUCAUUGUCAGAGGUGAACCUUCUUAAAGGAGUUAAGCUUAUUGAUAG 5093

Qy          4548 AGGGTATGTGTGCTTAGCTGATTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTG 4607
                  || :| |: :| ::||| | :::||: |:  | || |||:||||  : || || || :|
Db          5094 UGGAUACGUCUGUUUAGCCGGUUUGGUCGUCACGGGCGAGUGGAACUUGCCUGACAAUUG 5153

Qy          4608 CCGTGGTGGTGTCAGTGTTTGTATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAAC 4667
                 | | || ||:|: || |: :|: : |: || || || |:| ||||     | || || ||
Db          5154 CAGAGGAGGUGUGAGCGUGUGUCUGGUGGACAAAAGGAUGGAAAGAGCCGACGAGGCCAC 5213

Qy          4668 GCTGGGTGCGTATCACGCCCCTGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAA 4727
                  |: ||  | :|  || |  | ||:   || || | |:::   :: ||| :  : || ||
Db          5214 UCUCGGAUCUUACUACACAGCAGCUGCAAAGAAAAGAUUUCAGUUCAAGGUCGUUCCCAA 5273

Qy          4728 TTATTCAATAACATCCGAGGATGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAA 4787
                 ::|: | |:|||  || ||||| ||   |||  ||   :||||||: ::||: ||:|: |
Db          5274 UUAUGCUAUAACCACCCAGGACGCGAUGAAAAACGUCUGGCAAGUUUUAGUUAAUAUUAG 5333

Qy          4788 AGGAGTGGCTATGGAAGAAGGATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGT 4847
                 |   |:|   |:|  ||  || : |:|:||  : :|: :||||:: |: :|  : :|: :
Db          5334 AAAUGUGAAGAUGUCAGCGGGUUUCUGUCCGCUUUCUCUGGAGUUUGUGUCGGUGUGUAU 5393

Qy          4848 AGTACATAAAAATAATGTAAGAAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGG 4907
                  |:  |:| |||:||: :|| |  |||:::||| ||    |::   |  |:|| ||||||
Db          5394 UGUUUAUAGAAAUAAUAUAAAAUUAGGUUUGAGAGAGAAGAUUACAAACGUGAGAGACGG 5453

Qy          4908 CTCGCCAATTGAACTCACTGAAAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGC 4967
                    ||| |: ||||: || ||| | |: |::|| |||::| :||| || |: || |:| |
Db          5454 AGGGCCCAUGGAACUUACAGAAGAAGUCGUUGAUGAGUUCAUGGAAGAUGUCCCUAUGUC 5513

Qy          4968 TGTGA 4972
                   : |
Db          5514 GAUCA 5518

RESULT 13
US-09-466-422-3
; Sequence 3, Application US/09466422
; Patent No. 6303779
;  GENERAL INFORMATION:
;       APPLICANT: GARGER, STEPHEN
;                  HOLTZ, R. BARRY
;                  McCULLOCH, MICHAEL
;                  TURPEN, THOMAS
;       TITLE OF INVENTION: A PROCESS FOR ISOLATING AND
;                           PURIFYING VIRUSES SOLUBLE PROTEINS AND PEPTIDES
;                           FROM PLANT SOURCES
;       NUMBER OF SEQUENCES: 5
;       CORRESPONDENCE ADDRESS:
;            ADDRESSEE: Howrey & Simon
;            STREET: 1299 Pennsylvania Avenue N.W.
;            CITY: Washington
;            STATE: DC
;            COUNTRY: USA
;            ZIP: 20004
;       COMPUTER READABLE FORM:
;            MEDIUM TYPE: Diskette
;            COMPUTER: IBM Compatible
;            OPERATING SYSTEM: DOS
;            SOFTWARE: FastSEQ for Windows Version 2.0
;       CURRENT APPLICATION DATA:
;            APPLICATION NUMBER: US/09/466,422
;            FILING DATE: 17-Dec-1999
;            CLASSIFICATION: <Unknown>
;       PRIOR APPLICATION DATA:
;            APPLICATION NUMBER: 09/037,751
;            FILING DATE: <Unknown>
;       ATTORNEY/AGENT INFORMATION:
;            NAME: Halluin, Albert P
;            REGISTRATION NUMBER: 25,277
;            REFERENCE/DOCKET NUMBER: 00801.0140.999
;       TELECOMMUNICATION INFORMATION:
;            TELEPHONE: 650-463-8109
;            TELEFAX: 650-463-8400
```

```
;             TELEX: <Unknown>
;   INFORMATION FOR SEQ ID NO: 3:
;         SEQUENCE CHARACTERISTICS:
;             LENGTH: 6425 base pairs
;             TYPE: nucleic acid
;             STRANDEDNESS: single
;             TOPOLOGY: unknown
;         MOLECULE TYPE: Genomic RNA
;         SEQUENCE DESCRIPTION: SEQ ID NO: 3:
US-09-466-422-3

  Query Match             40.8%;  Score 2031;  DB 3;  Length 6425;
  Best Local Similarity   44.4%;  Pred. No. 0;
  Matches 2212;  Conservative  957;  Mismatches 1795;  Indels   21;  Gaps    4;

Qy                6 AAGGTAATTCCTGAGTTTCAAAGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAA 65
                    ||   | : ||  | :: |||| ||| || ::: |||| :| ||||||  :||  | ||
Db              537 AAAACAGUCCCCAACUUCCAAAAGGAAGCAUUUGACAGAUACGCAGAAAUUCCUGAAGAC 596

Qy               66 GTCTGCTGCTCTAAAACTTTTCAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGA 125
                    |    |:|    || ||::: |||      |||   || |||    || |    || |||
Db              597 GCUGUCUGUCACAAUACUUUCCAGACAAUGCGACAUCAGCCGAUGCAGCAAUCAGGCAGA 656

Qy              126 AGATACGCTGTTGCTCTGCACAGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCG 185
                       :| ||  ::|| |: |||||  : :|:|| |: || |   |:|||:: || || ||
Db              657 GUGUAUGCCAUUGCGCUACACAGCAUAUAUGACAUACCAGCCGAUGAGUUCGGGGCGGCA 716

Qy              186 TTAATATCTAAGAATATACATGTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTA 245
                     :  :    || ||: : ||:   :| :|:|| ||:: |   ::  | ||     :  :
Db              717 CUCUUGAGGAAAAAUGUCCAUACGUGCUAUGCCGCUUUCCACUUCUCUGAGAACCUGCUU 776

Qy              246 CTAGACCAGACGGAGGTTACGCTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGAT 305
                    |: ||  |  |  | |:  |   :  | ||||:   |||   :::     | || || ||
Db              777 CUUGAAGAUUCAUACGUCAAUUUGGACGAAAUCAACGCGUGUUUUUCGCGCGAUGGAGAC 836

Qy              306 GATGTTTCTTTTTTCTTTGCTGATGAAAGTACTTTAAATTATAGTCATAAATACAAAAAT 365
                     |  :  | ::::  :::||    || ||:||: :|| ::|: |:||:|  :|    ||:
Db              837 AAGUUGACCUUUUCUUUUGCAUCAGAGAGUACUCUUAAUUAUUGUCAUAGUUAUUCUAAU 896

Qy              366 ATCTTGCATTATGTAGTTAAATCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAG 425
                    |:  :  | :|:|:    ||| |::||:: || || :|:| :|||   |:::|| : |||
Db              897 AUUCUUAAGUAUGUGUGCAAAACUUACUUCCCGGCCUCUAAUAGAGAGGUUUACAUGAAG 956

Qy              426 GAATTTTTAGTCACTAGGGTTAATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTAT 485
                    || :::::||:||| || |::||:|| :||::::|:|| ::: | | | :|||:|| : :
Db              957 GAGUUUUUAGUCACCAGAGUUAAUACCUGGUUUUGUAAGUUUUCUAGAAUAGAUACUUUU 1016

Qy              486 ATTCTGTACAAGAGTGTTAGACAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATG 545
                     :: :|:||||  |:|:    ||   | |    ||:||:|| |||:: :|:   || |:|
Db             1017 CUUUUGUACAAAGGUGUGGCCCAUAAAAGUGUAGAUAGUGAGCAGUUUUAUACUGCAAUG 1076

Qy              546 GAAGACGCCTTTGCTTACAAGAAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTT 605
                    |||||||| :    ::|||| || ||  : || |:|: |||||  || |||    :| ::
Db             1077 GAAGACGCAUGGCAUUACAAAAAGACUCUUGCAAUGUGCAACAGCGAGAGAAUCCUCCUU 1136

Qy              606 AGAGACACGGCTTCGGTTAACTTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCG 665
                       ||  |  | :| |: || :  :||:: || || |:|| ||| |:||: |: |:|||
Db             1137 GAGGAUUCAUCAUCAGUCAAUUACUGGUUUCCCAAAAUGAGGGAUAUGGUCAUCGUACCA 1196

Qy              666 CTGTTTGAGGGTTCTATTACCAGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGT 725
                     : ::  ||  ::|: :    |  |  |||| |||  | |  || |:| : |:
Db             1197 UUAUUCGACAUUUCUUUGGAGACUAGUAAGAGGACGCGCAAGGAAGUCUUAGUGUCCAAG 1256

Qy              726 GACTTCGTTTACACAGTGCTTAATCATATCAGAACATATCAAGCCAAAGCGTTAACTTAC 785
                    || ::||: :  ||||:||::|| || |:  |||||:| || || |||||  :||| :||
Db             1257 GAUUUCGUGUUUACAGUGCUUAACCACAUUCGAACAUACCAGGCGAAAGCUCUUACAUAC 1316

Qy              786 CAGAACGTATTATCTTTCGTGGAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACT 845
                       || |: :: :| :: |: || :| |:  ||:|  | |: |: |: || ||:|: ||
Db             1317 GCAAAUGUUUUGUCCUUUGUCGAAUCGAUUCGAUCGAGGGUAAUCAUUAACGGUGUGACA 1376

Qy              846 GCTAGGTCTGAATGGGATGTAGATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTC 905
                    || |||:| |||:||||:|: || ||| |  :  : ||| ||::|:| |:||| :: : |
Db             1377 GCGAGGUCCGAAUGGGAUGUGGACAAAUCUUUGUUACAAUCCUUGUCCAUGACGUUUUAC 1436

Qy              906 TTGCAGACTAAGCTGGCTGCGCTTCAAGACGATATAGTAATGGGAAAGTTTCGGTGCTTG 965
                     :||| ||:||||: || |  |:  | || ||  :| : |:  | |||::: |   |
Db             1437 CUGCAUACUAAGCUUGCCGUUCUAAAGGAUGACUUACUGAUUAGCAAGUUUAGUCUCGGU 1496

Qy              966 GATAAGACCACTTCTGAACTTATTTGGGATGAGGTGGGCAAATTTTTTGGAAACGTTTTC 1025
                       || ||    :   | | : : :||||:||| :          :::|| ||||  ::
Db             1497 UCGAAAACGGUGUGCCAGCAUGUGUGGGAUGAGAUUUCGCUGGCGUUUGGGAACGCAUUU 1556

Qy             1026 CCCACTATCAAAGAGAGATTGGTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTG 1085
                    ||| |  : ||||||||  :  :|| ||||||| :: :    |:    |   | ||  :
Db             1557 CCCUCCGUGAAAGAGAGGCUCUUGAACAGGAAACUUAUCAGAGUGGCAGGCGACGCAUUA 1616

Qy             1086 AAGATCAAGATCCCAGATCTGTATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACC 1145
                     |||:|| | : || ||:|: :|:|: || :   | |||||| :: |:  |:|| :|||
Db             1617 GAGAUCAGGGUGCCUGAUCUAUAUGUGACCUUCCACGACAGAUUAGUGACUGAGUACAAG 1676

Qy             1146 AAGTCTGAGGAGTTACCGCATCTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATG 1205
                       :|:| |||  : ||    |: || |: | |||| |  : |||||| | ||    |:|
Db             1677 GCCUCUGUGGACAUGCCUGCGCUUGACAUUAGGAAGAAGAUGGAAGAAACGGAAGUGAUG 1736

Qy             1206 TACGACGCGTTATCAGAATTATCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAG 1265
                    :|| | ||  : :|||| ::|:|  :  : | ||   |:|| || ::|||: : |
Db             1737 UACAAUGCACUUUCAGAGUUAUCGGUGUUAAGGGAGUCUGACAAAUUCGAUGUUGAUGUU 1796

Qy             1266 TTCAAAGACATGTGCAAGGCTTTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTT 1325
                    ::     | |:|:|| |  |::: || |::   ||      ||||||    |: |: |:
Db             1797 UUUUCCCAGAUGUGCCAAUCUUUGGAAGUUGACCCAAUGACGGCAGCGAAGGUUAUAGUC 1856

Qy             1326 GCAGTGGCCGAGAATAGAAGCGGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAAT 1385
                    || |:       ||:   |||||: : ||:|: || :::||    || || |||| |||:
Db             1857 GCGGUCAUGAGCAAUGAGAGCGGUCUGACUCUCACAUUUGAACGACCUACUGAGGCGAAU 1916

Qy             1386 GTGGCTAAGGCTCT------TAAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCG 1439
                    |: ||    ||: :      : ||   | ||| :| || |  |   :     ::    |
Db             1917 GUUGCGCUAGCUUUACAGGAUCAAGAGAAGGCUUCAGAAGGUGCUUUGGUAGUUACCUCA 1976

Qy             1440 ACATCCGAAGAGGTGAACGTAAATAAATTTTCTATTGCTGAGAAAGGGAGATTGCCTGTG 1499
                    | |   |  || |        |  ||   ::| |: ||    | || |  |      |
Db             1977 AGAGAAGUUGAAGAACCGUCCAUGAAGGGUUCGAUGGCCAGAGGAGAGUUACAAUUAGCU 2036

Qy             1500 TGTGCAGAAAGTCATGGTTTGACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTC 1559
                     |:   |   |  |:  :  |  |    |  | :   ||  || ||||| : |||:|  :
Db             2037 GGUCUUGCUGGAGAUCAUCCGGAGUCGUCCUAUUCUAAGAACGAGGAGAUAGAGUCUUUA 2096

Qy             1560 AACGATTTCCATAAGGCTTGCGTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTC 1619
                     |  | :: ||:| |||    |  ||:    : |::   ||||| |:|   :|| ::|:
Db             2097 GAGCAGUUUCAUAUGGCAACGGCAGAUUCGUUAAUUCGUAAGCAGAUGAGCUCGAUUGUG 2156

Qy             1620 TACACTGGCTCACTCAAAGTTCAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCG 1679
                    :|||| ||  |  : ||||::|| ||||:||| |||: :  : || ||  :|| ||| :|
Db             2157 UACACGGGUCCGAUUAAAGUUCAGCAAAUGAAAAACUUUAUCGAUAGCCUGGUAGCAUCA 2216

Qy             1680 TTGTCCGCCACTGTATCAAATCTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCT 1739
                     : :| ||  | |: :| ||:|:   ||||   |: || ||:  ||  |    :||   :
Db             2217 CUAUCUGCUGCGGUGUCGAAUCUCGUCAAGAUCCUCAAAGAUACAGCUGCUAUUGACCUU 2276

Qy             1740 GATTCCAGGGAGAAAGTTGGTGTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCT 1799
                    ||  || |  | ||  ::|| |: : |||:|:  | :  |  |||:|| :  :||||||
Db             2277 GAAACCCGUCAAAAGUUUGGAGUCUUGGAUGUUGCAUCUAGGAAGUGGUUAAUCAAACCA 2336

Qy             1800 GCGGCCAAAGGTCATTCATGGGGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCA 1859
                     |||||||  |:||: ||:||||| |::|:        ||  | ||||      :   ||
Db             2337 ACGGCCAAGAGUCAUGCAUGGGGUGUUGUUGAAACCCACGCGAGGAAGUAUCAUGUGGCG 2396

Qy             1860 CTTCTATCTTATGAAGGAGATAGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTA 1919
                    |:: :    :|:|| |   |  |  :||:|||       || :|||| || |: ||:|:
Db             2397 CUUUUGGAAUAUGAUGAGCAGGGUGUGGUGACAUGCGAUGAUUGGAGAAGAGUAGCUGUC 2456

Qy             1920 TCATCTGATACAATGGTATATTCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATG 1979
                       :|:||  |  : |: :|::| || |: || || |:|  || :|:| | | |    :
Db             2457 AGCUCUGAGUCUGUUGUUUAUUCCGACAUGGCGAAACUCAGAACUCUGCGCAGACUGCUU 2516
```

```
Qy    1980 AGAGACGGTGAACCCCACGAACCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGT 2039
Db    2517 CGAAACGGAGAACCGCAUGUCAGUAGCGCAAAGGUUGUUCUUGUGGACGGAGUUCCGGGC 2576

Qy    2040 TGTGGAAAGTACAAAGGAGATTTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTT 2099
Db    2577 UGUGGGAAAACCAAAGAAAUUCUUUCCAGGGUUAAUUUUGAUGAAGAUCUAAUUUUAGUA 2636

Qy    2100 CCTGGAAAACAAGCTGCTGCTATGATCAGAAGAAGGGCTAATTCATCTGGACTGATAAGA 2159
Db    2637 CCUGGGAAGCAAGCCGCGGAAAUGAUCAGAAGACGUGCGAAUUCCUCAGGGAUUAUUGUG 2696

Qy    2160 GCCACAATGGACAATGTGAGAACGGTAGATTCACTTCTAATGCAT---------CCAAAA 2210
Db    2697 GCCACGAAGGACAACGUUAAAACCGUUGAUUCUUUCAUGAUGAAUUUUGGGAAAAGCACA 2756

Qy    2211 CCGCGATCACACAAGAGGCTTTTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTT 2270
Db    2757 CGCUGUCAGUUCAAGAGGUUAUUCAUUGAUGAAGGGUUGAUGUUGCAUACUGGUUGUGUU 2816

Qy    2271 AACTTCCTGGTGCTTATCTCTGGTTGCGACATCGCATACATTTACGGAGATACACAGCAG 2330
Db    2817 AAUUUUCUUGUGGCGAUGUCAUUGUGCGAAAUUGCAUAUGUUUACGGAGACACACAGCAG 2876

Qy    2331 ATTCCTTTCATTAACAGAGTTCAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAA 2390
Db    2877 AUUCCAUACAUCAAUAGAGUUUCAGGAUUCCCGUACCCCGCCCAUUUUGCCAAAUUGGAA 2936

Qy    2391 GTGGATGAAGTTGAGATGAGGAGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTC 2450
Db    2937 GUUGACGAGGUGGAGACACGCAGAACUACUCUCCGUUGUCCAGCCGAUGUCACACAUUAU 2996

Qy    2451 CTACAATCGAAGTACGAAGGAGCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCA 2510
Db    2997 CUGAACAGGAGAUAUGAGGGCUUUGUCAUGAGCACUUCUUCGGUUAAAAAGUCUGUUUCG 3056

Qy    2511 TCTGAGATGATAGGCGGTAAGGGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGGAAA 2570
Db    3057 CAGGAGAUGGUCGGCGGAGCCGCCGUGAUCAAUCCGAUCUCAAAACCCUUGCAUGGCAAG 3116

Qy    2571 ATTGTAACTTTCACTCAGGCTGATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTG 2630
Db    3117 AUCCUGACUUUUACCCAAUCGGAUAAAGAAGCUCUGCUUUCAAGAGGGUAUUCAGAUGUU 3176

Qy    2631 AACACCGTTCATGAGATCCAAGGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACG 2690
Db    3177 CACACUGUGCAUGAAGUGCAAGGCGAGACAUACUCUGAUGUUUCACUAGUUAGGUUAACC 3236

Qy    2691 GCAACTCCACTGACTCTGATTTCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGA 2750
Db    3237 CCUACACCAGUCUCCAUCAUUGCAGGAGACAGCCCACAUGUUUUGGUCGCAUUGUCAAGG 3296

Qy    2751 CACACAAAGAGCTTCAAATATTACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGT 2810
Db    3297 CACACCUGUUCGCUCAAGUACUACACUGUUGUUAUGGAUCCUUUAGUUAGUAUCAUUAGA 3356

Qy    2811 GATTTGTCTTCTTTAAGCTCCTTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGA 2870
Db    3357 GAUCUAGAGAAACUUAGCUCGUACUUGUUAGAUAUGUAUAAGGUCGAUGCAGGAACACAA 3416

Qy    2871 TAGCAATTACAGATGGATGCAGTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAA 2930
Db    3417 UAGCAAUUACAGAUUGACUCGGUGUUCAAAGGUUCCAAUCUUUUUGUUGCAGCGCCAAAG 3476

Qy    2931 TCAGGAGACTTTCCAGATCTACAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACT 2990
Db    3477 ACUGGUGAUAUUUCUGAUAUGCAGUUUUACUAUGAUAAGUGUCUCCCAGGCAACAGCACC 3536

Qy    2991 ATACTTAACAAGTATGATGCTGTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAG 3050
Db    3537 AUGAUGAAUAAUUUUGAUGCUGUUACCAUGAGGUUGACUGACAUUUCAUUGAAUGUCAAA 3596
```

```
Qy    3051 GATTGTGTTCTTGATTTTTCCAAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTA 3110
Db    3597 GAUUGCAUAUUGGAUAUGUCUAAGUCUGUUGCUGCGCCUAAGGAUCAAAUCAAACCACUA 3656

Qy    3111 GAGCCAGTTTTGCGTACCGCGGCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTG 3170
Db    3657 AUACCUAUGGUACGAACGGCGGCAGAAAUGCCACGCCAGACUGGACUAUUGGAAAAUUUA 3716

Qy    3171 GTTGCAATGATTAAAAGAAATTTCAACGCACCAGACCTGACGGGGACGATTGACATTGAG 3230
Db    3717 GUGGCGAUGAUUAAAAGGAACUUUAACGCACCCGAGUUGUCUGGCAUCAUUGAUAUUGAA 3776

Qy    3231 AGCACCGCATCTGTTGTAGTAGATAAGTTTTTTGATAGCTATTTTATTAAAAAAGAAAAA 3290
Db    3777 AAUACUGCAUCUUUAGUUGUAGAUAAGUUUUUUGAUAGUUAUUUGCUUAAAGAAAAAAGA 3836

Qy    3291 TACACAAAAAATATTGCTGGAGTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAAC 3350
Db    3837 AAACCAAAUAAAAAUGUUUCUUUGUUCAGUAGAGAGUCUCUCAAUAGAUGGUUAGAAAAG 3896

Qy    3351 AGGAAAGAAGTACTATTGGACGACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATC 3410
Db    3897 CAGGAACAGGUAACAAUAGGCCAGCUCGCAGAUUUUGAUUUUGUAGAUUUGCCAGCAGUU 3956

Qy    3411 GATCAGTACAAGCACATGATCAAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAG 3470
Db    3957 GAUCAGUACAGACACAUGAUUAAAGCACAACCCAAGCAAAAAUUGGACACUUCAAUCCAA 4016

Qy    3471 AATGAATACCCTGCTCTGCAAACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTG 3530
Db    4017 ACGGAGUACCCGGCUUUGCAGACGAUUGUGUACCAUUCAAAAAAGAUCAAUGCAAUAUUU 4076

Qy    3531 GCCGGTTTCT---CAGAGCTTACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTT 3587
Db    4077 GGCCCGUUGUUUAGUGAGCUUACUAGGCAAUUACUGGACAGUGUUGAUUCGAGCAGAUUU 4136

Qy    3588 CTTTTCTTTACTAGGAAAACTCCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCG 3647
Db    4137 UUGUUUUUCACAAGAAAGACACCAGCGCAGAUUGAGGAUUUCUUCGGAGAUCUCGACAGU 4196

Qy    3648 CACGTTCCTATGGATGTGTTAGAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAG 3707
Db    4197 CAUGUGCCGAUGGAUGUCUUGGAGCUGGAUAUAUCAAAAUACGACAAAUCUCAGAAUGAA 4256

Qy    3708 TTTCATTGTGCTGTAGAGTATGAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCC 3767
Db    4257 UUCCACUGUGCAGUAGAAUACGAGAUCUGGCGAAGAUUGGGUUUUGAAGACUUCUUGGGA 4316

Qy    3768 GAAGTGTGGAAACAAGGGCACAGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAG 3827
Db    4317 GAAGUUUGGAAACAAGGGCAUAGAAAGACCACCCUCAAGGAUUAUACCGCAGGUAUAAAA 4376

Qy    3828 ACATGTCTGTGGTATCAAAGGAAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTT 3887
Db    4377 ACUUGCAUCUGGUAUCAAAGAAAGAGCGGGGACGUCACGACGUUCAUUGGAAACACUGUG 4436

Qy    3888 ATAATAGCAGCTTGCTTGGGTTCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTT 3947
Db    4437 AUCAUUGCUGCAUGUUUGGCCUCGAUGCUUCCGAUGGAGAAAAUAAUCAAAGGAGCCUUU 4496

Qy    3948 TGTGGAGACGATTCCGTTTTGTATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCA 4007
Db    4497 UGCGGUGACGAUAGUCUGCUGUACUUUCCAAAGGGUUGUGAGUUUCCGGAUGUGCAACAC 4556

Qy    4008 TGTGCTAATCTCATGTGGAATTTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTT 4067
Db    4557 UCCGCGAAUCUUAUGUGGAAUUUUGAAGCAAAACUGUUUAAAAAACAGUAUGGAUACUUU 4616

Qy    4068 TGTGGTAGATACATCATACACCATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAG 4127
Db    4617 UGCGGAAGAUAUGUAAUACAUCACGACAGAGGAUGCAUUGUGUAUUACGAUCCCCUAAAG 4676

Qy    4128 TTGATCTCCAAACTTGGGGCAAAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGG 4187
```

```
               ::||:|:|  |||::|| || ||||| |:||||||::  || |||:: || |||:: ||
Db        4677 UUGAUCUCGAAACUUGGUGCUAAACACAUCAAGGAUUGGGAACACUUGGAGGAGUUCAGA 4736

Qy        4188 GTGTCTTTGTGCGATGTTGCTTGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTG 4247
                 |:|: : :| ||:|::||:  ::|| :    |||   :|       :   | ||| :|
Db        4737 AGGUCUCUUUGUGAUGUUGCUGUUUCGUU---GAACAAUUGUGCGUAUUACACACAGUUG 4793

Qy        4248 AACGCAGCTATCAAGGAGGTTCATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGT 4307
                |||  ||: :   |||||::||:|| |||||   :   ||::||:::| :: :||  |:
Db        4794 GACGACGCUGUAUGGGAGGUUCAUAAGACCGCCCCUCCAGGUUCGUUUGUUUAUAAAAGU 4853

Qy        4308 GTTAACAAATTTTTGTGTGATAAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAG 4367
                :    || : :::|: :||:||| :: : :::|||| :::|::: :| |:|||: :
Db        4854 CUGGUGAAGUAUUUGUCUGAUAAAGUUCUUUUUAGAAGUUUGUUUAUAGAUGGCUCUAGU 4913

Qy        4368 TCTCAGAGATACTGTCAAAATTAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACT 4427
               : : | ||  |  |: || |: |  |||:: |: || |:  | ||| | |  || |:  :
Db        4914 UGUUAAAGGAAAAGUGAAUAUCAAUGAGUUUAUCGACCUGACAAAAAUGGAGAAGAUCUU 4973

Qy        4428 TCCGGCATTCATGACTAAGGTCAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGC 4487
                ||| |  :  : ||    |: |||||:|::|     :| |  |: || || |: |:||
Db        4974 ACCGUCGAUGUUUACCCCUGUAAAGAGUGUUAUGUGUUCCAAAGUUGAUAAAAUAAUGGU 5033

Qy        4488 TGTTAAGAATGATAGTCTTTCTGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAA 4547
               :  : ||||:||     : :| || |:  |  : |::||||| |::||| :  :: | |
Db        5034 UCAUGAGAAUGAGUCAUUGUCAGAGGUGAACCUUCUUAAAGGAGUUAAGCUUAUUGAUAG 5093

Qy        4548 AGGGTATGTGTGCTTAGCTGATTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTG 4607
                || :| |: :| ::||| | :::||: |:  | || |||:||||  : || || || :|
Db        5094 UGGAUACGUCUGUUUAGCCGGUUUGGUCGUCACGGGCGAGUGGAACUUGCCUGACAAUUG 5153

Qy        4608 CCGTGGTGGTGTCAGTGTTTGTATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAAC 4667
               | | || ||:|: || |: :|: : |: || || || |:| ||||     | || || ||
Db        5154 CAGAGGAGGUGUGAGCGUGUGUCUGGUGGACAAAAGGAUGGAAAGAGCCGACGAGGCCAC 5213

Qy        4668 GCTGGGTGCGTATCACGCCCCTGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAA 4727
                |: ||  | :|  || |  | ||:   || || |  :::   :: ||| :  : || ||
Db        5214 UCUCGGAUCUUACUACACAGCAGCUGCAAAGAAAAGAUUUCAGUUCAAGGUCGUUCCCAA 5273

Qy        4728 TTATTCAATAACATCCGAGGATGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAA 4787
               ::|: | |:|||  || |||| ||   |||  ||   :||||||: ::||: ||:|: |
Db        5274 UUAUGCUAUAACCACCCAGGACGCGAUGAAAAACGUCUGGCAAGUUUUAGUUAAUAUUAG 5333

Qy        4788 AGGAGTGGCTATGGAAGAAGGATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGT 4847
               |   |:|   |:|  ||  || : |:|:||  : :|: :||||:: |: :|  : :|: :
Db        5334 AAAUGUGAAGAUGUCAGCGGGUUUCUGUCCGCUUUCUCUGGAGUUUGUGUCGGUGUGUAU 5393

Qy        4848 AGTACATAAAAATAATGTAAGAAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGG 4907
                |:  |:| |||:||: :|| |  |||:::||| ||    |::   |  |:|| ||||||
Db        5394 UGUUUAUAGAAAUAAUAUAAAAUUAGGUUUGAGAGAGAAGAUUACAAACGUGAGAGACGG 5453

Qy        4908 CTCGCCAATTGAACTCACTGAAAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGC 4967
                  ||| |: ||||: || ||| | |: |::|| |||::| :||| || |: || |:| |
Db        5454 AGGGCCCAUGGAACUUACAGAAGAAGUCGUUGAUGAGUUCAUGGAAGAUGUCCCUAUGUC 5513

Qy        4968 TGTGA 4972
                 : |
Db        5514 GAUCA 5518

RESULT 14
US-09-962-527-3
; Sequence 3, Application US/09962527
; Patent No. 6740740
;  GENERAL INFORMATION:
;       APPLICANT: GARGER, STEPHEN
;                  HOLTZ, R. BARRY
;                  McCULLOCH, MICHAEL
;                  TURPEN, THOMAS
;       TITLE OF INVENTION: A PROCESS FOR ISOLATING AND
;                           PURIFYING VIRUSES SOLUBLE PROTEINS AND PEPTIDES
;                           FROM PLANT SOURCES
;       NUMBER OF SEQUENCES: 5
;       CORRESPONDENCE ADDRESS:
;            ADDRESSEE: Howrey & Simon
;            STREET: 1299 Pennsylvania Avenue N.W.
;            CITY: Washington
;            STATE: DC
;            COUNTRY: USA
;            ZIP: 20004
;       COMPUTER READABLE FORM:
;            MEDIUM TYPE: Diskette
;            COMPUTER: IBM Compatible
;            OPERATING SYSTEM: DOS
;            SOFTWARE: FastSEQ for Windows Version 2.0
;       CURRENT APPLICATION DATA:
;            APPLICATION NUMBER: US/09/962,527
;            FILING DATE: 24-Sep-2001
;            CLASSIFICATION: <Unknown>
;       PRIOR APPLICATION DATA:
;            APPLICATION NUMBER: 09/037,751
;            FILING DATE: 10-march-1998
;       ATTORNEY/AGENT INFORMATION:
;            NAME: Halluin, Albert P
;            REGISTRATION NUMBER: 25,277
;            REFERENCE/DOCKET NUMBER: 00801.0140.999
;       TELECOMMUNICATION INFORMATION:
;            TELEPHONE: 650-463-8109
;            TELEFAX: 650-463-8400
;            TELEX: <Unknown>
;  INFORMATION FOR SEQ ID NO: 3:
;       SEQUENCE CHARACTERISTICS:
;            LENGTH: 6425 base pairs
;            TYPE: nucleic acid
;            STRANDEDNESS: single
;            TOPOLOGY: unknown
;       MOLECULE TYPE: Genomic RNA
;       SEQUENCE DESCRIPTION: SEQ ID NO: 3:
US-09-962-527-3

  Query Match             40.8%;  Score 2031;  DB 4;  Length 6425;
  Best Local Similarity   44.4%;  Pred. No. 0;
  Matches 2212;  Conservative  957;  Mismatches 1795;  Indels   21;  Gaps    4;

Qy           6 AAGGTAATTCCTGAGTTTCAAAGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAA 65
               ||   | : ||  | :: ||||| ||| || ::: |||| :| ||||||  :||  | ||
Db         537 AAAACAGUCCCCAACUUCCAAAAGGAAGCAUUUGACAGAUACGCAGAAAUUCCUGAAGAC 596

Qy          66 GTCTGCTGCTCTAAAACTTTTCAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGA 125
               |    |:|    || ||::: |||      |||   || |||    || |    || |||
Db         597 GCUGUCUGUCACAAUACUUUCCAGACAAUGCGACAUCAGCCGAUGCAGCAAUCAGGCAGA 656

Qy         126 AGATACGCTGTTGCTCTGCACAGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCG 185
                  :| ||  ::|| |: |||||  : :|:|| |: || |   |:|||:: || || ||
Db         657 GUGUAUGCCAUUGCGCUACACAGCAUAUAUGACAUACCAGCCGAUGAGUUCGGGGCGGCA 716

Qy         186 TTAATATCTAAGAATATACATGTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTA 245
                :  :    || ||: : ||:   :| :|:|| ||:: |   ::  | ||     :  :
Db         717 CUCUUGAGGAAAAAUGUCCAUACGUGCUAUGCCGCUUUCCACUUCUCUGAGAACCUGCUU 776

Qy         246 CTAGACCAGACGGAGGTTACGCTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGAT 305
               |: ||  |  |  | |: |   :  | ||||:   |||   :::     | || || ||
Db         777 CUUGAAGAUUCAUACGUCAAUUUGGACGAAAUCAACGCGUGUUUUUCGCGCGAUGGAGAC 836

Qy         306 GATGTTTCTTTTTTCTTTGCTGATGAAAGTACTTTAAATTATAGTCATAAATACAAAAAT 365
                |  :  | :::::  :::||    || ||:||: : ||::|: |:||:|  :|    ||:
Db         837 AAGUUGACCUUUUCUUUUGCAUCAGAGAGUACUCUUAAUUAUUGUCAUAGUUAUUCUAAU 896

Qy         366 ATCTTGCATTATGTAGTTAAATCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAG 425
               |:  :  | :|:|:    ||| |::||:: || || :|:| :|||   |:::|| : |||
Db         897 AUUCUUAAGUAUGUGUGCAAAACUUACUUCCCGGCCUCUAAUAGAGAGGUUUACAUGAAG 956

Qy         426 GAATTTTTAGTCACTAGGGTTAATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTAT 485
               || :::::||:||| || |::||:|| :||::::|:|| ::: | | | :|||:|| : :
Db         957 GAGUUUUUAGUCACCAGAGUUAAUACCUGGUUUUGUAAGUUUUCUAGAAUAGAUACUUUU 1016
```

```
Qy    486 ATTCTGTACAAGAGTGTTAGACAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATG 545
           :: :|:||||  |:|:    ||   | |    | :||:|| |||:: :|:   || |:|
Db   1017 CUUUUGUACAAAGGUGUGGCCCAUAAAAGUGUAGAUAGUGAGCAGUUUUAUACUGCAAUG 1076

Qy    546 GAAGACGCCTTTGCTTACAAGAAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTT 605
          |||||||| :    ::|||| || ||  : || |:|: |||||  || |||    :| ::
Db   1077 GAAGACGCAUGGCAUUACAAAAAGACUCUUGCAAUGUGCAACAGCGAGAGAAUCCUCCUU 1136

Qy    606 AGAGACACGGCTTCGGTTAACTTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCG 665
             ||  |  | :| |: || :  :||:: || || |:|| ||| |:||: |: |:|||
Db   1137 GAGGAUUCAUCAUCAGUCAAUUACUGGUUUCCCAAAAUGAGGGAUAUGGUCAUCGUACCA 1196

Qy    666 CTGTTTGAGGGTTCTATTACCAGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGT 725
           : :: ||   ::|: :    |  |  |||| |||  | |  || |:| : |:
Db   1197 UUAUUCGACAUUUCUUUGGAGACUAGUAAGAGGACGCGCAAGGAAGUCUUAGUGUCCAAG 1256

Qy    726 GACTTCGTTTACACAGTGCTTAATCATATCAGAACATATCAAGCCAAAGCGTTAACTTAC 785
          || ::||: :  ||||:||::|| || |:  ||||: | || || |||||  : || :||
Db   1257 GAUUUCGUGUUUACAGUGCUUAACCACAUUCGAACAUACCAGGCGAAAGCUCUUACAUAC 1316

Qy    786 CAGAACGTATTATCTTTCGTGGAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACT 845
             || |: :: :| :: |: || :| |:  ||:|  | |: |: |: || ||:|: ||
Db   1317 GCAAAUGUUUUGUCCUUUGUCGAAUCGAUUCGAUCGAGGGUAAUCAUUAACGGUGUGACA 1376

Qy    846 GCTAGGTCTGAATGGGATGTAGATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTC 905
          || |||:| |||:||||:|: || ||| |  :  : ||| ||::|:| |:||| :: : |
Db   1377 GCGAGGUCCGAAUGGGAUGUGGACAAAUCUUUGUUACAAUCCUUGUCCAUGACGUUUUAC 1436

Qy    906 TTGCAGACTAAGCTGGCTGCGCTTCAAGACGATATAGTAATGGAAAGTTTCGGTGCTTG 965
           :||| ||:||||: || |  |:  | || ||  :| : |:  | |||::: |   |
Db   1437 CUGCAUACUAAGCUUGCCGUUCUAAAGGAUGACUUACUGAUUAGCAAGUUUAGUCUCGGU 1496

Qy    966 GATAAGACCACTTCTGAACTTATTTGGGATGAGGTGGGCAAATTTTTGGAAACGTTTTC 1025
             || ||    :   | | : : :||||:||| :          :::|| ||||  ::
Db   1497 UCGAAAACGGUGUGCCAGCAUGUGUGGGAUGAGAUUUCGCUGGCGUUUGGGAACGCAUUU 1556

Qy   1026 CCCACTATCAAAGAGAGATTGGTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTG 1085
          ||| |  : ||||||||  :  :|| ||||||| :: :    |:    |   | ||  :
Db   1557 CCCUCCGUGAAAGAGAGGCUCUUGAACAGGAAACUUAUCAGAGUGGCAGGCGACGCAUUA 1616

Qy   1086 AAGATCAAGATCCCAGATCTGTATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACC 1145
           |||:|| | : || ||:|: :|:|: || :   | ||||| :: |:  |:|| :|||
Db   1617 GAGAUCAGGGUGCCUGAUCUAUAUGUGACCUUCCACGACAGAUUAGUGACUGAGUACAAG 1676

Qy   1146 AAGTCTGAGGAGTTACCGCATCTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATG 1205
             :|:| |||  : ||    |: |||:  | |||| |  : |||||| | ||    |:|
Db   1677 GCCUCUGUGGACAUGCCUGCGCUUGACAUUAGGAAGAAGAUGGAAGAAACGGAAGUGAUG 1736

Qy   1206 TACGACGCGTTATCAGAATTATCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAG 1265
          :|| | ||  : :|||| ::|:|  :  : | ||   |:|| || ::|||: : |
Db   1737 UACAAUGCACUUUCAGAGUUAUCGGUGUUAAGGGAGUCUGACAAAUUCGAUGUUGAUGUU 1796

Qy   1266 TTCAAAGACATGTGCAAGGCTTTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTT 1325
          ::     | |:|:|| |  |::: || |::   ||      ||||||    |: |: |:
Db   1797 UUUUCCCAGAUGUGCCAAUCUUUGGAAGUUGACCCAAUGACGGCAGCGAAGGUUAUAGUC 1856

Qy   1326 GCAGTGGCCGAGAATAGAAGCGGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAAT 1385
          || |:       ||:   |||||: : ||:|: || :::||    || || |||| |||:
Db   1857 GCGGUCAUGAGCAAUGAGAGCGGUCUGACUCUCACAUUUGAACGACCUACUGAGGCGAAU 1916

Qy   1386 GTGGCTAAGGCTCT------TAAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCG 1439
          |: ||    ||: :      : ||   | ||| :| || |  |   :     ::    |
Db   1917 GUUGCGCUAGCUUUACAGGAUCAAGAGAAGGCUUCAGAAGGUGCUUUGGUAGUUACCUCA 1976

Qy   1440 ACATCCGAAGAGGTGAACGTAAATAAATTTTCTATTGCTGAGAAAGGGAGATTGCCTGTG 1499
          | |   |  || |        |  ||   ::| |: ||      || |  |     .|
Db   1977 AGAGAAGUUGAAGAACCGUCCAUGAAGGGUUCGAUGGCCAGAGGAGAGUUACAAUUAGCU 2036

Qy   1500 TGTGCAGAAAGTCATGGTTTGACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTC 1559
           |:   |   |  |:  :  |  |    |  | :   || || ||||| : |||:|  :
Db   2037 GGUCUUGCUGGAGAUCAUCCGGAGUCGUCCUAUUCUAAGAACGAGGAGAUAGAGUCUUUA 2096

Qy   1560 AACGATTTCCATAAGGCTTGCGTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTC 1619
           |  | :: ||:| |||    |  ||:    : |::   ||||| |:|   :|| ::|:
Db   2097 GAGCAGUUUCAUAUGGCAACGGCAGAUUCGUUAAUUCGUAAGCAGAUGAGCUCGAUUGUG 2156

Qy   1620 TACACTGGCTCACTCAAAGTTCAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCG 1679
          :|||| ||  |  : ||||::|| ||||:||| |||: : : || ||  :|| ||| :|
Db   2157 UACACGGGUCCGAUUAAAGUUCAGCAAAUGAAAAACUUUAUCGAUAGCCUGGUAGCAUCA 2216

Qy   1680 TTGTCCGCCACTGTATCAAATCTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCT 1739
           : :| ||  || : :| ||:|:   ||||   |: || ||:  ||  |    :||   :
Db   2217 CUAUCUGCUGCGGUGUCGAAUCUCGUCAAGAUCCUCAAAGAUACAGCUGCUAUUGACCUU 2276

Qy   1740 GATTCCAGGGAGAAAGTTGGTGTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCT 1799
          ||  || |  | ||  ::|| |: : |||:|:  | :  |  |||:|| :  :||||||
Db   2277 GAAACCCGUCAAAAGUUUGGAGUCUUGGAUGUUGCAUCUAGGAAGUGGUUAAUCAAACCA 2336

Qy   1800 GCGGCCAAAGGTCATTCATGGGGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCA 1859
           |||||||  |:||: ||:|||| |::|:        ||  | ||||      :   ||
Db   2337 ACGGCCAAGAGUCAUGCAUGGGGUGUUGUUGAAACCCACGCGAGGAAGUAUCAUGUGGCG 2396

Qy   1860 CTTCTATCTTATGAAGGAGATAGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTA 1919
          |:: :    :|:|| |   |  |  :||:|||       || :|||| || |: ||:|:
Db   2397 CUUUUGGAAUAUGAUGAGCAGGGUGUGGUGACAUGCGAUGAUUGGAGAAGAGUAGCUGUC 2456

Qy   1920 TCATCTGATACAATGGTATATTCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATG 1979
             :|:||  |  : |: :|::| || |: || || |:|  || :|:| | | |    :
Db   2457 AGCUCUGAGUCUGUUGUUUAUUCCGACAUGGCGAAACUCAGAACUCUGCGCAGACUGCUU 2516

Qy   1980 AGAGACGGTGAACCCCACGAACCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGT 2039
           || |||| ||||| || |    :|  |||||| : |: |::|:||| || |: || ||
Db   2517 CGAAACGGAGAACCGCAUGUCAGUAGCGCAAAGGUUGUUCUUGUGGACGGAGUUCCGGGC 2576

Qy   2040 TGTGGAAAGTACAAAGGAGATTTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTT 2099
          :|:|| ||   ||||| |  : ::   ||  :: |: ::||:|| ||: : |: :: |:
Db   2577 UGUGGGAAAACCAAAGAAAUUCUUUCCAGGGUUAAUUUUGAUGAAGAUCUAAUUUUAGUA 2636

Qy   2100 CCTGGAAAACAAGCTGCTGCTATGATCAGAAGAAGGCTAATTCATCTGGACTGATAAGA 2159
          ||:|| || ||||| || |  |:|:|||||||| | || ||::| :| ||  : |:
Db   2637 CCUGGGAAGCAAGCCGCGGAAAUGAUCAGAAGACGUGCGAAUUCCUCAGGGAUUAUUGUG 2696

Qy   2160 GCCACAATGGACAATGTGAGAACGGTAGATTCACTTCTAATGCAT---------CCAAAA 2210
          ||||| | |||||| |: | ||| |: ||::|  :  : |:| |:            | |
Db   2697 GCCACGAAGGACAACGUUAAAACCGUUGAUUCUUUCAUGAUGAAUUUUGGGAAAAGCACA 2756

Qy   2211 CCGCGATCACACAAGAGGCTTTTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTT 2270
          |   |      ||||||| : :: |::||:||||||::||:| :||| || ||::|:|::
Db   2757 CGCUGUCAGUUCAAGAGGUUAUUCAUUGAUGAAGGGUUGAUGUUGCAUACUGGUUGUGUU 2816

Qy   2271 AACTTCCTGGTGCTTATCTCTGGTTGCGACATCGCATACATTTACGGAGATACACAGCAG 2330
          || :: |: |:|   |: :|    :|||| |: |||:|  :::||||||| |||||||||
Db   2817 AAUUUCUUGUGGCGAUGUCAUUGUGCGAAAUUGCAUAUGUUUACGGAGACACACAGCAG 2876

Qy   2331 ATTCCTTTCATTAACAGAGTTCAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAA 2390
          |::|| : ||: || ||||::      ::||||:| |||   ||::::|  ||  :| ||
Db   2877 AUUCCAUACAUCAAUAGAGUUUCAGGAUUCCCGUACCCCGCCCAUUUUGCCAAAUUGGAA 2936

Qy   2391 GTGGATGAAGTTGAGATGAGGAGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTC 2450
          |: || || |: ||||   | || || || |:  | :| ||||  ||:|: |    ::
Db   2937 GUUGACGAGGUGGAGACACGCAGAACUACUCUCCGUUGUCCAGCCGAUGUCACACAUUAU 2996

Qy   2451 CTACAATCGAAGTACGAAGGAGCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCA 2510
          |:  |   ||  :| || ||    |: |  | |||::|  | |:  ||   :| |: :|
Db   2997 CUGAACAGGAGAUAUGAGGGCUUUGUCAUGAGCACUUCUUCGGUUAAAAAGUCUGUUUCG 3056

Qy   2511 TCTGAGATGATAGGCGGTAAGGGAGTACTAAACAGTGTTTCCAAACCACTAAAGGAAA 2570
             ||||:| : |||||    |  |:  : ||     : :| |||||  :  | || ||
Db   3057 CAGGAGAUGGUCGGCGGAGCCGCCGUGAUCAAUCCGAUCUCAAAACCCUUGCAUGGCAAG 3116

Qy   2571 ATTGTAACTTTCACTCAGGCTGATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTG 2630
          |:  : ||::: || ||  | ||:|||   |   :       |  || :|:    |:|:
Db   3117 AUCCUGACUUUUACCCAAUCGGAUAAAGAAGCUCUGCUUUCAAGAGGGUAUUCAGAUGUU 3176

Qy   2631 AACACCGTTCATGAGATCCAAGGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACG 2690
           |||| |: ||:||  : ||||| || || :     ||:|: :| |: |: || :: ||
```

```
Db      3177 CACACUGUGCAUGAAGUGCAAGGCGAGACAUACUCUGAUGUUUCACUAGUUAGGUUAACC 3236

Qy      2691 GCAACTCCACTGACTCTGATTTCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGA 2750
              | || ||| :  |  : |:: |         ||| ||:|:: : |:|||  :| | ||
Db      3237 CCUACACCAGUCUCCAUCAUUGCAGGAGACAGCCCACAUGUUUUGGUCGCAUUGUCAAGG 3296

Qy      2751 CACACAAAGAGCTTCAAATATTACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGT 2810
             |||||        :||| :| :|||| |: |:  : ||:||:::||:    |: |::||
Db      3297 CACACCUGUUCGCUCAAGUACUACACUGUUGUUAUGGAUCCUUUAGUUAGUAUCAUUAGA 3356

Qy      2811 GATTTGTCTTCTTTAAGCTCCTTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGA 2870
             ||: :        : |||:| : | : ::||||| |:|:|:| ||: || ||||| |    |
Db      3357 GAUCUAGAGAAACUUAGCUCGUACUUGUUAGAUAUGUAUAAGGUCGAUGCAGGAACACAA 3416

Qy      2871 TAGCAATTACAGATGGATGCAGTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAA 2930
             :|||||::|||||: ||  | |:|::||||||:   ||:|: :::|: ||| | || ||
Db      3417 UAGCAAUUACAGAUUGACUCGGUGUUCAAAGGUUCCAAUCUUUUUGUUGCAGCGCCAAAG 3476

Qy      2931 TCAGGAGACTTTCCAGATCTACAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACT 2990
              | || ||  :: | ||: : |||:: :| :| ||:   :| |:||| || || || ||
Db      3477 ACUGGUGAUAUUUCUGAUAUGCAGUUUUACUAUGAUAAGUGUCUCCCAGGCAACAGCACC 3536

Qy      2991 ATACTTAACAAGTATGATGCTGTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAG 3050
             |:  : || || : :||:||:|::||||:||||::   :|| | :    : ||:|: ||
Db      3537 AUGAUGAAUAAUUUUGAUGCUGUUACCAUGAGGUUGACUGACAUUUCAUUGAAUGUCAAA 3596

Qy      3051 GATTGTGTTCTTGATTTTTCCAAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTA 3110
             ||::|  :  : ||: : :| ||   : :: |   ||| |||||    |    |   |:|
Db      3597 GAUUGCAUAUUGGAUAUGUCUAAGUCUGUUGCUGCGCCUAAGGAUCAAAUCAAACCACUA 3656

Qy      3111 GAGCCAGTTTTGCGTACCGCGGCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTG 3170
                ||  :  : || || ||||| |||  |||| |     | ||||:| : |||||: :
Db      3657 AUACCUAUGGUACGAACGGCGGCAGAAAUGCCACGCCAGACUGGACUAUUGGAAAAUUUA 3716

Qy      3171 GTTGCAATGATTAAAAGAAATTTCAACGCACCAGACCTGACGGGGACGATTGACATTGAG 3230
             |: || |:||::||||| || :: |||||||||| ||  :| | || |  |::|| |::||
Db      3717 GUGGCGAUGAUUAAAAGGAACUUUAACGCACCCGAGUUGUCUGGCAUCAUUGAUAUUGAA 3776

Qy      3231 AGCACCGCATCTGTTGTAGTAGATAAGTTTTTTGATAGCTATTTTATTAAAAAAGAAAAA 3290
             |  || |||:|: : |: |:|||:|||::::::||:|| :|:::  ::||| || ||| |
Db      3777 AAUACUGCAUCUUUAGUUGUAGAUAAGUUUUUUGAUAGUUAUUUGCUUAAAGAAAAAAGA 3836

Qy      3291 TACACAAAAAATATTGCTGGAGTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAAC 3350
              |  |||| || | :| :    :| : |  |  || :|  : |  |||:||:: |||||
Db      3837 AAACCAAAUAAAAAUGUUUCUUUGUUCAGUAGAGAGUCUCUCAAUAGAUGGUUAGAAAAG 3896

Qy      3351 AGGAAAGAAGTACTATTGGACGACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATC 3410
               | || | |:|  | : | | |  : ||  | :   |::::  |||: :||| ||  :
Db      3897 CAGGAACAGGUAACAAUAGGCCAGCUCGCAGAUUUUGAUUUUGUAGAUUUGCCAGCAGUU 3956

Qy      3411 GATCAGTACAAGCACATGATCAAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAG 3470
             ||:|||:|||  ||||:||: || || ||||| || || |||::||||  ::|||: ||
Db      3957 GAUCAGUACAGACACAUGAUUAAAGCACAACCCAAGCAAAAAUUGGACACUUCAAUCCAA 4016

Qy      3471 AATGAATACCCTGCTCTGCAAACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTG 3530
             |  || :|||| ||: :||| || |::|: :||||::| ||  |||:||| |  |: ::
Db      4017 ACGGAGUACCCGGCUUUGCAGACGAUUGUGUACCAUUCAAAAAAGAUCAAUGCAAUAUUU 4076

Qy      3531 GCCGGTTTCT---CAGAGCTTACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTT 3587
             | |   :: :     ||||::|| |||    : |: ||     ::||::| |  |  :::
Db      4077 GGCCCGUUGUUUAGUGAGCUUACUAGGCAAUUACUGGACAGUGUUGAUUCGAGCAGAUUU 4136

Qy      3588 CTTTTCTTTACTAGGAAAACTCCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCG 3647
              : :: :: || || || || ||||  ||||:: | || :: ::|   ||:|:||||
Db      4137 UUGUUUUUCACAAGAAAGACACCAGCGCAGAUUGAGGAUUUCUUCGGAGAUCUCGACAGU 4196

Qy      3648 CACGTTCCTATGGATGTGTTAGAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAG 3707
             || |: || |:|||:|: :: || |:|||:|: :| || :| || || :| ||||| ||
Db      4197 CAUGUGCCGAUGGAUGUCUUGGAGCUGGAUAUAUCAAAAUACGACAAAUCUCAGAAUGAA 4256

Qy      3708 TTTCATTGTGCTGTAGAGTATGAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCC 3767
             :: || :|:|| |:||| :| || |: :||  ||||::|||: :  | || :: ::||
Db      4257 UUCCACUGUGCAGUAGAAUACGAGAUCUGGCGAAGAUUGGGUUUUGAAGACUUCUUGGGA 4316

Qy      3768 GAAGTGTGGAAACAAGGGCACAGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAG 3827
             ||||: :||||||||||||| || || || ||  : |||||::| |  || || |: ||
Db      4317 GAAGUUUGGAAACAAGGGCAUAGAAAGACCACCCUCAAGGAUUAUACCGCAGGUAUAAAA 4376

Qy      3828 ACATGTCTGTGGTATCAAAGGAAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTT 3887
             || :|  : :||:|:||||| || ||||| || |: || || ::||: || || ||:|:
Db      4377 ACUUGCAUCUGGUAUCAAAGAAAGAGCGGGGACGUCACGACGUUCAUUGGAAACACUGUG 4436

Qy      3888 ATAATAGCAGCTTGCTTGGGTTCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTT 3947
             |: |: || || :| ::||  :| |:| : ||||:||| ||  : |: ||||| || :::
Db      4437 AUCAUUGCUGCAUGUUUGGCCUCGAUGCUUCCGAUGGAGAAAAUAAUCAAAGGAGCCUUU 4496

Qy      3948 TGTGGAGACGATTCCGTTTTGTATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCA 4007
             :| || |||||:    :  :|:| :::||||||||::  || :: || ||  : ||
Db      4497 UGCGGUGACGAUAGUCUGCUGUACUUUCCAAAGGGUUGUGAGUUUCCGGAUGUGCAACAC 4556

Qy      4008 TGTGCTAATCTCATGTGGAATTTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTT 4067
             :  || ||:|: |:|:||||::::|| || ||||:|: :| |||   |:| || :||:::
Db      4557 UCCGCGAAUCUUAUGUGGAAUUUUGAAGCAAAACUGUUUAAAAAACAGUAUGGAUACUUU 4616

Qy      4068 TGTGGTAGATACATCATACACCATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAG 4127
             :| || |||:|  : |:||| || || |  |||   |: |:|:|::| ||:||  : |||
Db      4617 UGCGGAAGAUAUGUAAUACAUCACGACAGAGGAUGCAUUGUGUAUUACGAUCCCCUAAAG 4676

Qy      4128 TTGATCTCCAAACTTGGGGCAAAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGG 4187
             ::||:|:| ||||::|| || ||||| |:||||||::  || |||:: || |||:: ||
Db      4677 UUGAUCUCGAAACUUGGUGCUAAACACAUCAAGGAUUGGGAACACUUGGAGGAGUUCAGA 4736

Qy      4188 GTGTCTTTGTGCGATGTTGCTTGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTG 4247
               |:|: : :| ||:|::||:  ::|| :    |||   :|       :   | ||| :|
Db      4737 AGGUCUCUUUGUGAUGUUGCUGUUUCGUU---GAACAAUUGUGCGUAUUACACACAGUUG 4793

Qy      4248 AACGCAGCTATCAAGGAGGTTCATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGT 4307
              |||  ||: :   |||||::||:|| |||||   :   ||::||:::| :: :||  |:
Db      4794 GACGACGCUGUAUGGGAGGUUCAUAAGACCGCCCCUCCAGGUUCGUUUGUUUAUAAAAGU 4853

Qy      4308 GTTAACAAATTTTTGTGTGATAAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAG 4367
              :    || : :::|: :||:||| :: : :::|||| :::|::: :| |:|||: :
Db      4854 CUGGUGAAGUAUUUGUCUGAUAAAGUUCUUUUUAGAAGUUUGUUUAUAGAUGGCUCUAGU 4913

Qy      4368 TCTCAGAGATACTGTCAAAATTAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACT 4427
             : : | ||  |  |: || |: |  |||:: |: || |:  | |||  |||  |||:  :
Db      4914 UGUUAAAGGAAAAGUGAAUAUCAAUGAGUUUAUCGACCUGACAAAAAUGGAGAAGAUCUU 4973

Qy      4428 TCCGGCATTCATGACTAAGGTCAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGC 4487
              ||| |  :  : ||    |: |||||:|::|     :| |  |: || || |: |:||
Db      4974 ACCGUCGAUGUUUACCCCUGUAAAGAGUGUUAUGUGUUCCAAAGUUGAUAAAAUAAUGGU 5033

Qy      4488 TGTTAAGAATGATAGTCTTTCTGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAA 4547
             :  : ||||:||     : :| || |:  |  : |::||||| |::||| :  :: | |
Db      5034 UCAUGAGAAUGAGUCAUUGUCAGAGGUGAACCUUCUUAAAGGAGUUAAGCUUAUUGAUAG 5093

Qy      4548 AGGGTATGTGTGCTTAGCTGATTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTG 4607
              || :| |: :| ::||| | :::||: |:  | || |||:||||  : || || || :|
Db      5094 UGGAUACGUCUGUUUAGCCGGUUUGGUCGUCACGGGCGAGUGGAACUUGCCUGACAAUUG 5153

Qy      4608 CCGTGGTGGTGTCAGTGTTTGTATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAAC 4667
             | | || ||:|: |  |: :|: : |: || || || |:| ||||     | || || ||
Db      5154 CAGAGGAGGUGUGAGCGUGUGUCUGGUGGACAAAAGGAUGGAAAGAGCCGACGAGGCCAC 5213

Qy      4668 GCTGGGTGCGTATCACGCCCCTGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAA 4727
              |: ||  | :|  || |  | ||:   || || |  :::   :: ||| :  : || ||
Db      5214 UCUCGGAUCUUACUACACAGCAGCUGCAAAGAAAAGAUUUCAGUUCAAGGUCGUUCCCAA 5273

Qy      4728 TTATTCAATAACATCCGAGGATGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAA 4787
             ::|: | |:|||  || ||||| ||   |||  ||   :||||||: ::||: ||:|: |
Db      5274 UUAUGCUAUAACCACCCAGGACGCGAUGAAAAACGUCUGGCAAGUUUUAGUUAAUAUUAG 5333

Qy      4788 AGGAGTGGCTATGGAAGAAGGATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGT 4847
             |   |:|   |:|  ||  || : |:|:||  : :|: :||||:: |: :|  : :|: :
Db      5334 AAAUGUGAAGAUGUCAGCGGGUUUCUGUCCGCUUUCUCUGGAGUUUGUGUCGGUGUGUAU 5393
```

```
Qy       4848 AGTACATAAAAATAATGTAAGAAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGG 4907
               |:  |:| |||:||: :|| |  |||:::||| ||    |::   |  |:|| ||||||
Db       5394 UGUUUAUAGAAAUAAUAUAAAAUUAGGUUUGAGAGAGAAGAUUACAAACGUGAGAGACGG 5453

Qy       4908 CTCGCCAATTGAACTCACTGAAAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGC 4967
                 ||| |: ||||: || ||| | | |: |::|| |||::| :||| || |: || |:| |
Db       5454 AGGGCCCAUGGAACUUACAGAAGAAGUCGUUGAUGAGUUCAUGGAAGAUGUCCCUAUGUC 5513

Qy       4968 TGTGA 4972
                : |
Db       5514 GAUCA 5518


RESULT 15
US-09-259-741-5
; Sequence 5, Application US/09259741
; Patent No. 6033895
;  GENERAL INFORMATION:
;    APPLICANT:  GARGER, STEPHEN
;    APPLICANT:  HOLTZ, R. BARRY
;    APPLICANT:  McCULLOCH, MICHAEL
;    APPLICANT:  TURPEN, THOMAS
;    TITLE OF INVENTION:  A PROCESS FOR ISOLATING AND
;    TITLE OF INVENTION:  PURIFYING VIRUSES SOLUBLE PROTEINS AND PEPTIDES FROM PLANT
;    TITLE OF INVENTION:  SOURCES
;    NUMBER OF SEQUENCES:  5
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  Howrey & Simon
;      STREET:  1299 Pennsylvania Avenue N.W.
;      CITY:  Washington
;      STATE:  DC
;      COUNTRY:  USA
;      ZIP:  20004
;    COMPUTER READABLE FORM:
;      MEDIUM TYPE:  Diskette
;      COMPUTER:  IBM Compatible
;      OPERATING SYSTEM:  DOS
;      SOFTWARE:  FastSEQ for Windows Version 2.0
;    CURRENT APPLICATION DATA:
;      APPLICATION NUMBER:  US/09/259,741
;      FILING DATE:  February 25, 1999
;      CLASSIFICATION:
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:  09/037,751
;      FILING DATE:  March 10, 1998
;    ATTORNEY/AGENT INFORMATION:
;      NAME:  Halluin, Albert P
;      REGISTRATION NUMBER:  25,277
;      REFERENCE/DOCKET NUMBER:  00801.0140.US01
;    TELECOMMUNICATION INFORMATION:
;      TELEPHONE:  650-463-8100
;      TELEFAX:  650-463-8400
;      TELEX:
;  INFORMATION FOR SEQ ID NO:  5:
;    SEQUENCE CHARACTERISTICS:
;      LENGTH:  6446 base pairs
;      TYPE:  nucleic acid
;      STRANDEDNESS:  single
;      TOPOLOGY:  unknown
;    MOLECULE TYPE:  Genomic RNA
US-09-259-741-5

  Query Match              40.8%;  Score 2031;  DB 3;  Length 6446;
  Best Local Similarity    44.4%;  Pred. No. 0;
  Matches 2212;  Conservative  957;  Mismatches 1795;  Indels   21;  Gaps    4;

Qy          6 AAGGTAATTCCTGAGTTTCAAAGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAA 65
              ||   | : ||  | :: |||| ||| || ::: |||| :| ||||||  :||  | ||
Db        537 AAAACAGUCCCCAACUUCCAAAAGGAAGCAUUUGACAGAUACGCAGAAAUUCCUGAAGAC 596

Qy         66 GTCTGCTGCTCTAAAACTTTTCAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGA 125
              |    |:|    || ||::: |||      |||   || |||    || |    || |||
Db        597 GCUGUCUGUCACAAUACUUUCCAGACAAUGCGACAUCAGCCGAUGCAGCAAUCAGGCAGA 656

Qy        126 AGATACGCTGTTGCTCTGCACAGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCG 185
                 :| ||  ::|| |: ||||||  : :|:|| |: || |   |:|||:: || || ||
Db        657 GUGUAUGCCAUUGCGCUACACAGCAUAUAUGACAUACCAGCCGAUGAGUUCGGGGCGGCA 716

Qy        186 TTAATATCTAAGAATATACATGTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTA 245
               :  :    || ||: : ||:   :| :|:|| ||:: |   ::  | ||     :  :
Db        717 CUCUUGAGGAAAAAUGUCCAUACGUGCUAUGCCGCUUUCCACUUCUCUGAGAACCUGCUU 776

Qy        246 CTAGACCAGACGGAGGTTACGCTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGAT 305
              |: ||  |  |  | |: |   :  | ||||:   |||   :::     | || || ||
Db        777 CUUGAAGAUUCAUACGUCAAUUUGGACGAAAUCAACGCGUGUUUUUCGCGCGAUGGAGAC 836

Qy        306 GATGTTTCTTTTTTCTTTGCTGATGAAAGTACTTTAAATTATAGTCATAAATACAAAAAT 365
               |  :  | ::::  :::||    || ||:||: : ||::|: |:||:|  :|    ||:
Db        837 AAGUUGACCUUUUCUUUUGCAUCAGAGAGUACUCUUAAUUAUUGUCAUAGUUAUUCUAAU 896

Qy        366 ATCTTGCATTATGTAGTTAAATCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAG 425
              |:  :  | :|:|:    ||| |::||:: || || :|:| :|||   |:::|| : |||
Db        897 AUUCUUAAGUAUGUGUGCAAAACUUACUUCCCGGCCUCUAAUAGAGAGGUUUACAUGAAG 956

Qy        426 GAATTTTTAGTCACTAGGGTTAATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTAT 485
              || :::::||:||| || |:||:|| :||::::|:|| :::: | | | :|||:|| : :
Db        957 GAGUUUUUAGUCACCAGAGUUAAUACCUGGUUUUGUAAGUUUUCUAGAAUAGAUACUUUU 1016

Qy        486 ATTCTGTACAAGAGTGTTAGACAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATG 545
               :: :|:||||  |:|:    ||   | |    ||:||:|| |||:: :|:   || |:|
Db       1017 CUUUUGUACAAAGGUGUGGCCCAUAAAAGUGUAGAUAGUGAGCAGUUUUAUACUGCAAUG 1076

Qy        546 GAAGACGCCTTTGCTTACAAGAAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTT 605
              |||||||| :    ::|||| || ||  : || |:|: ||||||  || |||    :| ::
Db       1077 GAAGACGCAUGGCAUUACAAAAAGACUCUUGCAAUGUGCAACAGCGAGAGAAUCCUCCUU 1136

Qy        606 AGAGACACGGCTTCGGTTAACTTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCG 665
                 ||  |  | :| |: || :  :||:: || || |:|| ||| |:||: |: |:|||
Db       1137 GAGGAUUCAUCAUCAGUCAAUUACUGGUUUCCCAAAAUGAGGGAUAUGGUCAUCGUACCA 1196

Qy        666 CTGTTTGAGGGTTCTATTACCAGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGT 725
               : ::  ||  ::|: :    |  |  |||| |||  | |  || |:| : |:
Db       1197 UUAUUCGACAUUUCUUUGGAGACUAGUAAGAGGACGCGCAAGGAAGUCUUAGUGUCCAAG 1256

Qy        726 GACTTCGTTTACACAGTGCTTAATCATATCAGAACATATCAAGCCAAAGCGTTAACTTAC 785
              || ::||: :  ||||:||::|| || |:  |||||:| || || |||||  : || :||
Db       1257 GAUUUCGUGUUUACAGUGCUUAACCACAUUCGAACAUACCAGGCGAAAGCUCUUACAUAC 1316

Qy        786 CAGAACGTATTATCTTTCGTGGAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACT 845
                 || |: :: :| :: |: || :| |:  ||:|  | |: |: |: ||  ||:|: ||
Db       1317 GCAAAUGUUUUGUCCUUUGUCGAAUCGAUUCGAUCGAGGGUAAUCAUUAACGGUGUGACA 1376

Qy        846 GCTAGGTCTGAATGGGATGTAGATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTC 905
              || |||:| |||:||||:|: || ||| |  :  : ||| ||::|:| |:||| :: : |
Db       1377 GCGAGGUCCGAAUGGGAUGUGGACAAAUCUUUGUUACAAUCCUUGUCCAUGACGUUUUAC 1436

Qy        906 TTGCAGACTAAGCTGGCTGCGCTTCAAGACGATATAGTAATGGGAAAGTTTCGGTGCTTG 965
               :||| ||:||||: || |  |:  | || ||  :| : |:  | |||::: |   |
Db       1437 CUGCAUACUAAGCUUGCCGUUCUAAAGGAUGACUUACUGAUUAGCAAGUUUAGUCUCGGU 1496

Qy        966 GATAAGACCACTTCTGAACTTATTTGGGATGAGGTGGGCAAATTTTTTGGAAACGTTTTC 1025
                 || ||    :   | | : : :||||:||| :          :::|| ||||  ::
Db       1497 UCGAAAACGGUGUGCCAGCAUGUGUGGGAUGAGAUUUCGCUGGCGUUUGGGAACGCAUUU 1556

Qy       1026 CCCACTATCAAAGAGAGATTGGTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTG 1085
              ||| |  : ||||||||  :  :|| ||||||| :: :    |:    |   | ||  :
Db       1557 CCCUCCGUGAAAGAGAGGCUCUUGAACAGGAAACUUAUCAGAGUGGCAGGCGACGCAUUA 1616

Qy       1086 AAGATCAAGATCCCAGATCTGTATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACC 1145
               |||:|| | : || ||:|: :|:|: || :   | ||||| :: |:  |:|| :|||
Db       1617 GAGAUCAGGGUGCCUGAUCUAUAUGUGACCUUCCACGACAGAUUAGUGACUGAGUACAAG 1676

Qy       1146 AAGTCTGAGGAGTTACCGCATCTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATG 1205
                 :|:| |||  : ||    |: || |: | |||| |  : |||||| | ||    |:|
Db       1677 GCCUCUGUGGACAUGCCUGCGCUUGACAUUAGGAAGAAGAUGGAAGAAACGGAAGUGAUG 1736
```

```
Qy       1206 TACGACGCGTTATCAGAATTATCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAG 1265
              :|| | ||  : :|||| ::|:|  :  : | ||   |:|| || ::|||: : |
Db       1737 UACAAUGCACUUUCAGAGUUAUCGGUGUUAAGGGAGUCUGACAAAUUCGAUGUUGAUGUU 1796

Qy       1266 TTCAAAGACATGTGCAAGGCTTTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTT 1325
              ::     | |:|:|| |  |::: || |::   ||       ||||||    |: |: |:
Db       1797 UUUUCCCAGAUGUGCCAAUCUUUGGAAGUUGACCCAAUGACGGCAGCGAAGGUUAUAGUC 1856

Qy       1326 GCAGTGGCCGAGAATAGAAGCGGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAAT 1385
              || |:       ||:   |||||: : ||:|: || :::||    || || |||| |||:
Db       1857 GCGGUCAUGAGCAAUGAGAGCGGUCUGACUCUCACAUUUGAACGACCUACUGAGGCGAAU 1916

Qy       1386 GTGGCTAAGGCTCT------TAAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCG 1439
              |: ||    ||: :      : ||   | ||| :| || |  |   :     ::    |
Db       1917 GUUGCGCUAGCUUUACAGGAUCAAGAGAAGGCUUCAGAAGGUGCUUUGGUAGUUACCUCA 1976

Qy       1440 ACATCCGAAGAGGTGAACGTAAATAAATTTTCTATTGCTGAGAAAGGAGATTGCCTGTG 1499
              | |   |  || |        |  ||   ::| |: ||      || |  |      |
Db       1977 AGAGAAGUUGAAGAACCGUCCAUGAAGGGUUCGAUGGCCAGAGGAGAGUUACAAUUAGCU 2036

Qy       1500 TGTGCAGAAAGTCATGGTTTGACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTC 1559
               |:   |   |  |:  :  |  |    |  | :   || || ||||| : |||:|  :
Db       2037 GGUCUUGCUGGAGAUCAUCCGGAGUCGUCCUAUUCUAAGAACGAGGAGAUAGAGUCUUUA 2096

Qy       1560 AACGATTTCCATAAGGCTTGCGTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTC 1619
               |  | :: ||:| |||    |  ||:    : |::   ||||| |:|   :|| ::|:
Db       2097 GAGCAGUUUCAUAUGGCAACGGCAGAUUCGUUAAUUCGUAAGCAGAUGAGCUCGAUUGUG 2156

Qy       1620 TACACTGGCTCACTCAAAGTTCAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCG 1679
              :|||| ||  |  : ||||::|| ||||:||| |||: : : || ||  :|| ||| :|
Db       2157 UACACGGGUCCGAUUAAAGUUCAGCAAAUGAAAAACUUUAUCGAUAGCCUGGUAGCAUCA 2216

Qy       1680 TTGTCCGCCACTGTATCAAATCTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCT 1739
               : :| ||  | |: :| ||:|:   ||||   |: || ||:  ||  |    :||   :
Db       2217 CUAUCUGCUGCGGUGUCGAAUCUCGUCAAGAUCCUCAAAGAUACAGCUGCUAUUGACCUU 2276

Qy       1740 GATTCCAGGGAGAAAGTTGGTGTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCT 1799
              ||  || |  | ||  ::|| |: : ||:|:   | :  |  |||:|| :  :||||||
Db       2277 GAAACCCGUCAAAAGUUUGGAGUCUUGGAUGUUGCAUCUAGGAAGUGGUUAAUCAAACCA 2336

Qy       1800 GCGGCCAAAGGTCATTCATGGGGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCA 1859
               |||||||  |:||: ||:|||| |::|:        ||  | ||||      :   ||
Db       2337 ACGGCCAAGAGUCAUGCAUGGGGUGUUGUUGAAACCCACGCGAGGAAGUAUCAUGUGGCG 2396

Qy       1860 CTTCTATCTTATGAAGGAGATAGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTA 1919
              |:: :    :|:|| |   |  |  :||:|||       || :|||| || |: ||:|:
Db       2397 CUUUUGGAAUAUGAUGAGCAGGGUGUGGUGACAUGCGAUGAUUGGAGAAGAGUAGCUGUC 2456

Qy       1920 TCATCTGATACAATGGTATATTCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATG 1979
                 :|:||  |  : |: :|::| || |: || || |:|  || :|:| | | |    :
Db       2457 AGCUCUGAGUCUGUUGUUUAUUCCGACAUGGCGAAACUCAGAACUCUGCGCAGACUGCUU 2516

Qy       1980 AGAGACGGTGAACCCCACGAACCTACTGCAAAGATGGTACTTGTGGATGGGTGCCTGGT 2039
               || |||| ||||| || |    :| ||||||  : |:|::|:|||  || |: || ||
Db       2517 CGAAACGGAGAACCGCAUGUCAGUAGCGCAAAGGUUGUUCUUGUGGACGGAGUUCCGGGC 2576

Qy       2040 TGTGGAAAGTACAAAGGAGATTTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTT 2099
              :|:|| ||   ||||| |  : ::   ||  :: |: ::||:|| ||: : |: :: |:
Db       2577 UGUGGAAAACCAAAGAAAUUCUUUCCAGGGUUAAUUUGAUGAAGAUCUAAUUUUAGUA 2636

Qy       2100 CCTGGAAAACAAGCTGCTGCTATGATCAGAAGAAGGGCTAATTCATCTGGACTGATAAGA 2159
              ||:|| || ||||| || |  |:||:||||||| | || ||::| :| ||  : |:
Db       2637 CCUGGGAAGCAAGCCGCGGAAAUGAUCAGAAGACGUGCGAAUUCCUCAGGAUUAUUGUG 2696

Qy       2160 GCCACAATGGACAATGTGAGAACGGTAGATTCACTTCTAATGCAT---------CCAAAA 2210
              ||||| | ||||||  : | ||| |: ||::|  :  : |:| |:            | |
Db       2697 GCCACGAAGGACAACGUUAAAACCGUUGAUUCUUUCAUGAUGAAUUUUGGGAAAAGCACA 2756

Qy       2211 CCGCGATCACACAAGAGGCTTTTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTT 2270
              |   |      ||||||| : :: |::||:||||||::||:| :||| || ||::|:|::
Db       2757 CGCUGUCAGUUCAAGAGGUUAUUCAUUGAUGAAGGGUUGAUGUUGCAUACUGGUUGUGUU 2816

Qy       2271 AACTTCCTGGTGCTTATCTCTGGTTGCGACATCGCATACATTTACGGAGATACACAGCAG 2330
              || :: |: |:|   |: :|    :|||| |: ||:|   :::||||||| |||||||||
Db       2817 AAUUUUCUUGUGGCGAUGUCAUUGUGCGAAAUUGCAUAUGUUUACGGAGACACACAGCAG 2876

Qy       2331 ATTCCTTTCATTAACAGAGTTCAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAA 2390
              |::|| : ||: || ||||::      ::||||:| |||   ||::::|  ||  :| ||
Db       2877 AUUCCAUACAUCAAUAGAGUUUCAGGAUUCCCGUACCCCGCCCAUUUUGCCAAAUUGGAA 2936

Qy       2391 GTGGATGAAGTTGAGATGAGGAGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTC 2450
              |: || || |: ||||   | || || || |:  | :| ||||  ||:|: |    ::
Db       2937 GUUGACGAGGUGGAGACACGCAGAACUACUCUCCGUUGUCCAGCCGAUGUCACACAUUAU 2996

Qy       2451 CTACAATCGAAGTACGAAGGAGCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCA 2510
              |:  |   ||  :| || ||    |: |  | |||::|  | |:  ||   :| |: :|
Db       2997 CUGAACAGGAGAUAUGAGGGCUUUGUCAUGAGCACUUCUUCGGUUAAAAAGUCUGUUUCG 3056

Qy       2511 TCTGAGATGATAGGCGGTAAGGGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGGAAA 2570
                 ||||:| : |||||    |  |:  : ||     : :| |||||  :  | || ||
Db       3057 CAGGAGAUGGUCGGCGGAGCCGCCGUGAUCAAUCCGAUCUCAAAACCCUUGCAUGGCAAG 3116

Qy       2571 ATTGTAACTTTCACTCAGGCTGATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTG 2630
              |:  : ||::: || ||  | ||:|||   |   :       |  || :|:    |:|:
Db       3117 AUCCUGACUUUUACCCAAUCGGAUAAAGAAGCUCUGCUUUCAAGAGGGUAUUCAGAUGUU 3176

Qy       2631 AACACCGTTCATGAGATCCAAGGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACG 2690
               |||| |: ||:||  : ||||| || || :     ||:|: :| |:  : || :: ||
Db       3177 CACACUGUGCAUGAAGUGCAAGGCGAGACAUACUCUGAUGUUUCACUAGUUAGGUUAACC 3236

Qy       2691 GCAACTCCACTGACTCTGATTTCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGA 2750
               | || ||| :  |  : |:: |         ||| ||:|:: : |:|||  :| | ||
Db       3237 CCUACACCAGUCUCCAUCAUUGCAGGAGACAGCCCACAUGUUUUGGUCGCAUUGUCAAGG 3296

Qy       2751 CACACAAAGAGCTTCAAATATTACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGT 2810
              |||||        :||| :| :|||| |: |:  : ||:||:::||:    |: |::||
Db       3297 CACACCUGUUCGCUCAAGUACUACACUGUUGUUAUGGAUCCUUUAGUUAGUAUCAUUAGA 3356

Qy       2811 GATTTGTCTTCTTTAAGCTCCTTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGA 2870
              ||: :        : |||:| : | : ::||| |:|:|:| ||: || ||||| |    |
Db       3357 GAUCUAGAGAAACUUAGCUCGUACUUGUUAGAUAUGUAUAAGGUCGAUGCAGGAACACAA 3416

Qy       2871 TAGCAATTACAGATGGATGCAGTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAA 2930
              :|||||::||||: ||  | |:|::||||||:   ||:|: :::|: ||| | || ||
Db       3417 UAGCAAUUACAGAUUGACUCGGUGUUCAAAGGUUCCAAUCUUUUUGUUGCAGCGCCAAAG 3476

Qy       2931 TCAGGAGACTTTCCAGATCTACAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACT 2990
               | || ||  :: | ||: : |||:: :| :|||:    :| |:||| || || || ||
Db       3477 ACUGGUGAUAUUUCUGAUAUGCAGUUUUACUAUGAUAAGUGUCUCCCAGGCAACAGCACC 3536

Qy       2991 ATACTTAACAAGTATGATGCTGTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAG 3050
              |:  : || || : :||:||:|::||||:||||::   :|| | :    : ||:|: ||
Db       3537 AUGAUGAAUAAUUUUGAUGCUGUUACCAUGAGGUUGACUGACAUUUCAUUGAAUGUCAAA 3596

Qy       3051 GATTGTGTTCTTGATTTTTCCAAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTA 3110
              ||::|  :  : ||: : :| ||   : :: |   ||| |||||    |    |   |:|
Db       3597 GAUUGCAUAUUGGAUAUGUCUAAGUCUGUUGCUGCGCCUAAGGAUCAAAUCAAACCACUA 3656

Qy       3111 GAGCCAGTTTTGCGTACCGCGGCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTG 3170
                 ||  :  : || || ||||| |||  |||| |     | ||||:| : |||||: :
Db       3657 AUACCUAUGGUACGAACGGCGGCAGAAAUGCCACGCCAGACUGGACUAUUGGAAAAUUUA 3716

Qy       3171 GTTGCAATGATTAAAAGAAATTTCAACGCACCAGACCTGACGGGGACGATTGACATTGAG 3230
              |: || |:||::||||| || :: |||||||| ||  :| | || |  |::|| |::||
Db       3717 GUGGCGAUGAUUAAAAGGAACUUUAACGCACCCGAGUUGUCUGGCAUCAUUGAUAUUGAA 3776

Qy       3231 AGCACCGCATCTGTTGTAGTAGATAAGTTTTTTGATAGCTATTTTATTAAAAAAGAAAAA 3290
              |  || |||:|: : |: |:|||:|||::::::||:|| :|:::  ::||| || ||| |
Db       3777 AAUACUGCAUCUUUAGUUGUAGAUAAGUUUUUUGAUAGUUAUUUGCUUAAAGAAAAAAGA 3836

Qy       3291 TACACAAAAAATATTGCTGGAGTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAAC 3350
               |  |||| || | :| :    :| : |  |  || :|  : |  |||:|::  |||||
Db       3837 AAACCAAAUAAAAAUGUUUCUUUGUUCAGUAGAGAGUCUCUCAAUAGAUGGUUAGAAAAG 3896

Qy       3351 AGGAAAGAAGTACTATTGGACGACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATC 3410
                | || | |:|  | : | | |  : ||  | :   |::::  |||: :||| ||  :
```

```
Db       3897 CAGGAACAGGUAACAAUAGGCCAGCUCGCAGAUUUUGAUUUUGUAGAUUUGCCAGCAGUU 3956

Qy       3411 GATCAGTACAAGCACATGATCAAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAG 3470
              ||:|||:|||  ||||:||: || || ||||| || || |||::||||  ::|||: ||
Db       3957 GAUCAGUACAGACACAUGAUUAAAGCACAACCCAAGCAAAAAUUGGACACUUCAAUCCAA 4016

Qy       3471 AATGAATACCCTGCTCTGCAAACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTG 3530
              |  || :||||| ||: :||| || |::|: :||||::| ||  |||:||| |  |: ::
Db       4017 ACGGAGUACCCGGCUUUGCAGACGAUUGUGUACCAUUCAAAAAAGAUCAAUGCAAUAUUU 4076

Qy       3531 GCCGGTTTCT---CAGAGCTTACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTT 3587
              | |   :: :     ||||::|| |||    : |: ||     ::||::| |  |  :::
Db       4077 GGCCCGUUGUUUAGUGAGCUUACUAGGCAAUUACUGGACAGUGUUGAUUCGAGCAGAUUU 4136

Qy       3588 CTTTTCTTTACTAGGAAAACTCCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCG 3647
               : :: :: || || || || ||||  ||||:: | || :: ::|   ||:|:||||
Db       4137 UUGUUUUUCACAAGAAAGACACCAGCGCAGAUUGAGGAUUUCUUCGGAGAUCUCGACAGU 4196

Qy       3648 CACGTTCCTATGGATGTGTTAGAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAG 3707
              || |: || |:|||:|: :: || |:|||:|: :| || :| || || :| ||||| ||
Db       4197 CAUGUGCCGAUGGAUGUCUUGGAGCUGGAUAUAUCAAAAUACGACAAAUCUCAGAAUGAA 4256

Qy       3708 TTTCATTGTGCTGTAGAGTATGAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCC 3767
              :: || :|:|| |:||| :| || |: :||  ||||::|||: :  | || :: ::||
Db       4257 UUCCACUGUGCAGUAGAAUACGAGAUCUGGCGAAGAUUGGGUUUUGAAGACUUCUUGGGA 4316

Qy       3768 GAAGTGTGGAAACAAGGGCACAGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAG 3827
              ||||: :||||||||||||| || || || ||  : |||||::| |  || || |: ||
Db       4317 GAAGUUUGGAAACAAGGGCAUAGAAAGACCACCCUCAAGGAUUAUACCGCAGGUAUAAAA 4376

Qy       3828 ACATGTCTGTGGTATCAAAGGAAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTT 3887
              || :|  : :||:|:||||| |||  ||| || |: || || ::||: || || ||:|:
Db       4377 ACUUGCAUCUGGUAUCAAAGAAAGAGCGGGGACGUCACGACGUUCAUUGGAAACACUGUG 4436

Qy       3888 ATAATAGCAGCTTGCTTGGGTTCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTT 3947
              |: |: || || :| ::||  :| |:| : ||||:||| ||  : |: ||||| || :::
Db       4437 AUCAUUGCUGCAUGUUUGGCCUCGAUGCUUCCGAUGGAGAAAAUAAUCAAAGGAGCCUUU 4496

Qy       3948 TGTGGAGACGATTCCGTTTTGTATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCA 4007
              :| || |||||:    :  :|:| :::||||||||::  || :: || ||  : ||
Db       4497 UGCGGUGACGAUAGUCUGCUGUACUUUCCAAAGGGUUGUGAGUUUCCGGAUGUGCAACAC 4556

Qy       4008 TGTGCTAATCTCATGTGGAATTTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTT 4067
              :  || ||:|: |:|:||||::::|| || ||||:|: :| |||   |:| || :||:::
Db       4557 UCCGCGAAUCUUAUGUGGAAUUUUGAAGCAAAACUGUUUAAAAAACAGUAUGGAUACUUU 4616

Qy       4068 TGTGGTAGATACATCATACACCATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAG 4127
              :| || |||:|  : |:||| || || |  |||   |: |:|:|::| ||:||  : |||
Db       4617 UGCGGAAGAUAUGUAAUACAUCACGACAGAGGAUGCAUUGUGUAUUACGAUCCCCUAAAG 4676

Qy       4128 TTGATCTCCAAACTTGGGGCAAAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGG 4187
              ::||:|:| ||||::|| || ||||| |:||||||::  || |||:: || |||:: ||
Db       4677 UUGAUCUCGAAACUUGGUGCUAAACACAUCAAGGAUUGGGAACACUUGGAGGAGUUCAGA 4736

Qy       4188 GTGTCTTTGTGCGATGTTGCTTGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTG 4247
                |:|: : :| ||:|::||:  ::|| :    |||   :|       :   | ||| :|
Db       4737 AGGUCUCUUUGUGAUGUUGCUGUUUCGUU---GAACAAUUGUGCGUAUUACACACAGUUG 4793

Qy       4248 AACGCAGCTATCAAGGAGGTTCATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGT 4307
               |||  ||: :   |||||::||:|| |||||   :   ||::||:::| :: :||  |:
Db       4794 GACGACGCUGUAUGGGAGGUUCAUAAGACCGCCCCUCCAGGUUCGUUUGUUUAUAAAAGU 4853

Qy       4308 GTTAACAAATTTTTGTGTGATAAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAG 4367
               :    || : :::|: :||:||| :: : :::|||| :::|::: :| |:|||: :
Db       4854 CUGGUGAAGUAUUUGUCUGAUAAAGUUCUUUUUAGAAGUUUGUUUAUAGAUGGCUCUAGU 4913

Qy       4368 TCTCAGAGATACTGTCAAAATTAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACT 4427
              : : | ||  |  |: || |: |  |||:: |: || |:  | |||  |||  |||:  :
Db       4914 UGUUAAAGGAAAAGUGAAUAUCAAUGAGUUUAUCGACCUGACAAAAAUGGAGAAGAUCUU 4973

Qy       4428 TCCGGCATTCATGACTAAGGTCAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGC 4487
               ||| |  :  : ||    |: |||||:|::|     :| |  |: || || |: |:||
Db       4974 ACCGUCGAUGUUUACCCCUGUAAAGAGUGUUAUGUGUUCCAAAGUUGAUAAAAUAAUGGU 5033

Qy       4488 TGTTAAGAATGATAGTCTTTCTGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAA 4547
              :  : ||||:||     : :| || |:  |  : |::||||| |::||| :  ::  | |
Db       5034 UCAUGAGAAUGAGUCAUUGUCAGAGGUGAACCUUCUUAAAGGAGUUAAGCUUAUUGAUAG 5093

Qy       4548 AGGGTATGTGTGCTTAGCTGATTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTG 4607
               || :| |: :| ::||| | :::||: |:  | || ||||:||||  : || || || :|
Db       5094 UGGAUACGUCUGUUUAGCCGGUUUGGUCGUCACGGGCGAGUGGAACUUGCCUGACAAUUG 5153

Qy       4608 CCGTGGTGGTGTCAGTGTTTGTATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAAC 4667
              | | || ||:|: || |: :|: : |: || || || |:| ||||     | || || ||
Db       5154 CAGAGGAGGUGUGAGCGUGUGUCUGGUGGACAAAAGGAUGGAAAGAGCCGACGAGGCCAC 5213

Qy       4668 GCTGGGTGCGTATCACGCCCCTGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAA 4727
               |: ||  | :|  || |  | ||:   || || |  :::   :: ||| :  : || ||
Db       5214 UCUCGGAUCUUACUACACAGCAGCUGCAAAGAAAAGAUUUCAGUUCAAGGUCGUUCCCAA 5273

Qy       4728 TTATTCAATAACATCCGAGGATGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAA 4787
              ::|: | |:|||  || |||| ||   |||  ||   :||||||: ::||: ||:|: |
Db       5274 UUAUGCUAUAACCACCCAGGACGCGAUGAAAAACGUCUGGCAAGUUUUAGUUAAUAUUAG 5333

Qy       4788 AGGAGTGGCTATGGAAGAAGGATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGT 4847
              |   |:|   |:|  ||  || : |:|:||  : :|: :||||:: |: :|  : :|: :
Db       5334 AAAUGUGAAGAUGUCAGCGGGUUUCUGUCCGCUUUCUCUGGAGUUUGUGUCGGUGUGUAU 5393

Qy       4848 AGTACATAAAAATAATGTAAGAAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGG 4907
               |:  |:| |||:||: :|| |  |||:::||| ||    |::   |  |:|| ||||||
Db       5394 UGUUUAUAGAAAUAAUAUAAAAUUAGGUUUGAGAGAGAAGAUUACAAACGUGAGAGACGG 5453

Qy       4908 CTCGCCAATTGAACTCACTGAAAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGC 4967
                 ||| |: ||||: || ||| | |: |::|| |||::| :||| || |: || |:| |
Db       5454 AGGGCCCAUGGAACUUACAGAAGAAGUCGUUGAUGAGUUCAUGGAAGAUGUCCCUAUGUC 5513

Qy       4968 TGTGA 4972
                : |
Db       5514 GAUCA 5518

Search completed: July 28, 2005, 09:02:44
Job time : 540.084 secs
```

```
                    GenCore version 5.1.6
          Copyright (c) 1993 - 2005  Compugen Ltd.

OM nucleic - nucleic search, using sw model

Run on:         July 28, 2005, 08:33:34 ; Search time 1883.98 Seconds
                                           (without alignments)
                                          17081.170 Million cell updates/sec

Title:          US-09-551-494-5_COPY_534_5505
Perfect score:  4972
Sequence:       1 ctaacaaggtaattcctgag..........tgaagtaccaatggctgtga 4972

Scoring table:  IDENTITY_NUC
                Gapop 10.0 , Gapext 1.0

Searched:       7287783 seqs, 3236178273 residues

Total number of hits satisfying chosen parameters:      14575566

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
                 Maximum Match 100%
                 Listing first 45 summaries

Database :       Published_Applications_NA:*
                1:  /cgn2_6/ptodata/2/pubpna/US07_PUBCOMB.seq:*
                2:  /cgn2_6/ptodata/2/pubpna/PCT_NEW_PUB.seq:*
                3:  /cgn2_6/ptodata/2/pubpna/US06_NEW_PUB.seq:*
                4:  /cgn2_6/ptodata/2/pubpna/US06_PUBCOMB.seq:*
                5:  /cgn2_6/ptodata/2/pubpna/US07_NEW_PUB.seq:*
                6:  /cgn2_6/ptodata/2/pubpna/PCTUS_PUBCOMB.seq:*
                7:  /cgn2_6/ptodata/2/pubpna/US08_NEW_PUB.seq:*
                8:  /cgn2_6/ptodata/2/pubpna/US08_PUBCOMB.seq:*
                9:  /cgn2_6/ptodata/2/pubpna/US09A_PUBCOMB.seq:*
                10:  /cgn2_6/ptodata/2/pubpna/US09B_PUBCOMB.seq:*
                11:  /cgn2_6/ptodata/2/pubpna/US09C_PUBCOMB.seq:*
                12:  /cgn2_6/ptodata/2/pubpna/US09_NEW_PUB.seq:*
                13:  /cgn2_6/ptodata/2/pubpna/US10A_PUBCOMB.seq:*
                14:  /cgn2_6/ptodata/2/pubpna/US10B_PUBCOMB.seq:*
                15:  /cgn2_6/ptodata/2/pubpna/US10C_PUBCOMB.seq:*
                16:  /cgn2_6/ptodata/2/pubpna/US10D_PUBCOMB.seq:*
                17:  /cgn2_6/ptodata/2/pubpna/US10E_PUBCOMB.seq:*
                18:  /cgn2_6/ptodata/2/pubpna/US10F_PUBCOMB.seq:*
                19:  /cgn2_6/ptodata/2/pubpna/US10G_PUBCOMB.seq:*
                20:  /cgn2_6/ptodata/2/pubpna/US10H_PUBCOMB.seq:*
                21:  /cgn2_6/ptodata/2/pubpna/US10I_PUBCOMB.seq:*
                22:  /cgn2_6/ptodata/2/pubpna/US10_NEW_PUB.seq:*
                23:  /cgn2_6/ptodata/2/pubpna/US11A_PUBCOMB.seq:*
                24:  /cgn2_6/ptodata/2/pubpna/US11_NEW_PUB.seq:*
                25:  /cgn2_6/ptodata/2/pubpna/US60_NEW_PUB.seq:*
                26:  /cgn2_6/ptodata/2/pubpna/US60_PUBCOMB.seq:*

      Pred. No. is the number of results predicted by chance to have a
      score greater than or equal to the score of the result being printed,
      and is derived by analysis of the total score distribution.

                                SUMMARIES
                  %
Result          Query
  No.   Score   Match Length DB  ID                    Description
----------------------------------------------------------------------
    1    4972   100.0   6355  15  US-10-321-434-7       Sequence 7, Appli
    2  2034.2    40.9   6395  10  US-09-962-527-1       Sequence 1, Appli
    3  2034.2    40.9   6395  19  US-10-828-029-1       Sequence 1, Appli
    4  2034.2    40.9   6439  10  US-09-962-527-2       Sequence 2, Appli
    5  2034.2    40.9   6439  19  US-10-828-029-2       Sequence 2, Appli
    6    2031    40.8   6395  17  US-10-338-592-2       Sequence 2, Appli
    7    2031    40.8   6425  10  US-09-962-527-3       Sequence 3, Appli
    8    2031    40.8   6425  19  US-10-828-029-3       Sequence 3, Appli
    9    2031    40.8   6446  10  US-09-962-527-5       Sequence 5, Appli
   10    2031    40.8   6446  19  US-10-828-029-5       Sequence 5, Appli
   11    2031    40.8   6475  10  US-09-962-527-4       Sequence 4, Appli
   12    2031    40.8   6475  19  US-10-828-029-4       Sequence 4, Appli
   13    2031    40.8  10600  16  US-10-356-708-1       Sequence 1, Appli
   14    2031    40.8  10600  19  US-10-280-913A-1      Sequence 1, Appli
   15    2031    40.8  10600  19  US-10-684-134-1       Sequence 1, Appli
   16    2031    40.8  10600  19  US-10-637-758-1       Sequence 1, Appli
   17    2031    40.8  10624  16  US-10-356-708-2       Sequence 2, Appli
   18    2031    40.8  10624  19  US-10-280-913A-2      Sequence 2, Appli
   19    2031    40.8  10624  19  US-10-684-134-2       Sequence 2, Appli
   20    2031    40.8  10624  19  US-10-637-758-2       Sequence 2, Appli
   21    2031    40.8  11222  19  US-10-679-620-73      Sequence 73, Appl
   22    2031    40.8  11641   9  US-09-993-059-33      Sequence 33, Appl
   23    2031    40.8  11641  15  US-10-103-327-33      Sequence 33, Appl
   24    2031    40.8  11641  18  US-10-684-300-13      Sequence 13, Appl
   25    2031    40.8  11641  18  US-10-684-349-13      Sequence 13, Appl
   26    2031    40.8  11641  20  US-10-851-388-33      Sequence 33, Appl
   27    2031    40.8  11641  22  US-10-984-389-33      Sequence 33, Appl
   28  2029.4    40.8   7685   9  US-09-949-317-22      Sequence 22, Appl
   29  2029.4    40.8   7685   9  US-09-949-317-25      Sequence 25, Appl
   30  2029.4    40.8   7685   9  US-09-949-316-22      Sequence 22, Appl
   31  2029.4    40.8   7685   9  US-09-949-316-25      Sequence 25, Appl
   32  2029.4    40.8   7685  14  US-10-200-051-22      Sequence 22, Appl
   33  2029.4    40.8   7685  14  US-10-200-051-25      Sequence 25, Appl
   34  2029.4    40.8   7686   9  US-09-949-317-23      Sequence 23, Appl
   35  2029.4    40.8   7686   9  US-09-949-316-23      Sequence 23, Appl
   36  2029.4    40.8   7686  14  US-10-200-051-23      Sequence 23, Appl
   37  2029.4    40.8   7687   9  US-09-949-317-24      Sequence 24, Appl
   38  2029.4    40.8   7687   9  US-09-949-316-24      Sequence 24, Appl
   39  2029.4    40.8   7687  14  US-10-200-051-24      Sequence 24, Appl
   40  2029.4    40.8   7688   9  US-09-949-317-27      Sequence 27, Appl
   41  2029.4    40.8   7688   9  US-09-949-316-27      Sequence 27, Appl
   42  2029.4    40.8   7688  14  US-10-200-051-27      Sequence 27, Appl
   43  2029.4    40.8  10132   9  US-09-978-199-3       Sequence 3, Appli
   44  2027.8    40.8  10607  16  US-10-098-155-1       Sequence 1, Appli
   45  2027.8    40.8  10631  16  US-10-098-155-2       Sequence 2, Appli

                              ALIGNMENTS

RESULT 1
US-10-321-434-7
; Sequence 7, Application US/10321434
; Publication No. US20030135882A1
; GENERAL INFORMATION:
;  APPLICANT: Metzlaff, Michael
;  APPLICANT:  Meulewater, Frank
;  APPLICANT:  Gossel,, Veronique
;  APPLICANT:  Fach, Ina
;  TITLE OF INVENTION: Improved methods and means for delivering inhibitory RNA to plan
;  TITLE OF INVENTION:  applications thereof
;  FILE REFERENCE: FKOMOD
;  CURRENT APPLICATION NUMBER: US/10/321,434
;  CURRENT FILING DATE:  2002-12-18
;  NUMBER OF SEQ ID NOS: 18
;  SOFTWARE: PatentIn version 3.0
; SEQ ID NO 7
;   LENGTH: 6355
;   TYPE: DNA
;   ORGANISM: Artificial
;   FEATURE:
;   OTHER INFORMATION: cDNA sequence of the genome of TMV-U2
US-10-321-434-7

  Query Match             100.0%;  Score 4972;  DB 15;  Length 6355;
  Best Local Similarity   100.0%;  Pred. No. 0;
  Matches 4972;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 CTAACAAGGTAATTCCTGAGTTTCAAAGGAGGCTTTTAACAGGTATGCAGAAGCTCCCA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
```

```
Db         534 CTAACAAGGTAATTCCTGAGTTTCAAAGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCA 593

Qy          61 ACGAAGTCTGCTGCTCTAAAACTTTTCAGGATTGTCGAATACATCCGCCAGAGAATAGTG 120
               ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         594 ACGAAGTCTGCTGCTCTAAAACTTTTCAGGATTGTCGAATACATCCGCCAGAGAATAGTG 653

Qy         121 GTAGAAGATACGCTGTTGCTCTGCACAGTTTGTATGATATTCCTGTGCATGAGTTTGGAG 180
               ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         654 GTAGAAGATACGCTGTTGCTCTGCACAGTTTGTATGATATTCCTGTGCATGAGTTTGGAG 713

Qy         181 CTGCGTTAATATCTAAGAATATACATGTATGTTATGCAGCTTCCATTTTGGCAGAAGCAT 240
               ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         714 CTGCGTTAATATCTAAGAATATACATGTATGTTATGCAGCTTCCATTTTGGCAGAAGCAT 773

Qy         241 TATTACTAGACCAGACGGAGGTTACGCTTAATGAAATAGGCGCAACTTTCAAAAGAGAAG 300
               ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         774 TATTACTAGACCAGACGGAGGTTACGCTTAATGAAATAGGCGCAACTTTCAAAAGAGAAG 833

Qy         301 GTGATGATGTTTCTTTTTCTTTGCTGATGAAAGTACTTTAAATTATAGTCATAAATACA 360
               ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         834 GTGATGATGTTTCTTTTTCTTTGCTGATGAAAGTACTTTAAATTATAGTCATAAATACA 893

Qy         361 AAAATATCTTGCATTATGTAGTTAAATCTTACTTTCCTGCTTCTAGTAGAATAGTTTACT 420
               ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         894 AAAATATCTTGCATTATGTAGTTAAATCTTACTTTCCTGCTTCTAGTAGAATAGTTTACT 953

Qy         421 TTAAGGAATTTTTAGTCACTAGGGTTAATACTTGGTTTTGTAAATTTACCAAAGTAGATA 480
               ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         954 TTAAGGAATTTTTAGTCACTAGGGTTAATACTTGGTTTTGTAAATTTACCAAAGTAGATA 1013

Qy         481 CCTATATTCTGTACAAGAGTGTTAGACAAGTAGGGTGTGATAGTGATCAGTTCTATGAGG 540
               ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        1014 CCTATATTCTGTACAAGAGTGTTAGACAAGTAGGGTGTGATAGTGATCAGTTCTATGAGG 1073

Qy         541 CGATGGAAGACGCCTTTGCTTACAAGAAAACCTTGGCCATGTTCAACACTGAAAGAGCAA 600
               ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        1074 CGATGGAAGACGCCTTTGCTTACAAGAAAACCTTGGCCATGTTCAACACTGAAAGAGCAA 1133

Qy         601 TCTTTAGAGACACGGCTTCGGTTAACTTTTGGTTCCCTAAGATGAAGGACATGGTGATAG 660
               ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        1134 TCTTTAGAGACACGGCTTCGGTTAACTTTTGGTTCCCTAAGATGAAGGACATGGTGATAG 1193

Qy         661 TACCGCTGTTTGAGGGTTCTATTACCAGCAAAAAGATGACAAGGAGTGAGGTCATTGTTA 720
               ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        1194 TACCGCTGTTTGAGGGTTCTATTACCAGCAAAAAGATGACAAGGAGTGAGGTCATTGTTA 1253

Qy         721 ATCGTGACTTCGTTTACACAGTGCTTAATCATATCAGAACATATCAAGCCAAAGCGTTAA 780
               ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        1254 ATCGTGACTTCGTTTACACAGTGCTTAATCATATCAGAACATATCAAGCCAAAGCGTTAA 1313

Qy         781 CTTACCAGAACGTATTATCTTTCGTGGAGTCTATAAGATCCCGCGTGATAATCAATGGTG 840
               ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        1314 CTTACCAGAACGTATTATCTTTCGTGGAGTCTATAAGATCCCGCGTGATAATCAATGGTG 1373

Qy         841 TTACTGCTAGGTCTGAATGGGATGTAGATAAAGCAATTCTTCAACCCTTGTCAATGACTT 900
               ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        1374 TTACTGCTAGGTCTGAATGGGATGTAGATAAAGCAATTCTTCAACCCTTGTCAATGACTT 1433

Qy         901 TCTTCTTGCAGACTAAGCTGGCTGCGCTTCAAGACGATATAGTAATGGGAAAGTTTCGGT 960
               ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        1434 TCTTCTTGCAGACTAAGCTGGCTGCGCTTCAAGACGATATAGTAATGGGAAAGTTTCGGT 1493

Qy         961 GCTTGGATAAGACCACTTCTGAACTTATTTGGGATGAGGTGGGCAAATTTTTTGGAAACG 1020
               ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        1494 GCTTGGATAAGACCACTTCTGAACTTATTTGGGATGAGGTGGGCAAATTTTTTGGAAACG 1553

Qy        1021 TTTTCCCCACTATCAAAGAGAGATTGGTGAGCAGGAAAATTCTGGATGTAAGTGAGAATG 1080
               ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        1554 TTTTCCCCACTATCAAAGAGAGATTGGTGAGCAGGAAAATTCTGGATGTAAGTGAGAATG 1613

Qy        1081 CTCTGAAGATCAAGATCCCAGATCTGTATGTCACATGGAAAGACAGGTTCGTAGCTGAAT 1140
               ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        1614 CTCTGAAGATCAAGATCCCAGATCTGTATGTCACATGGAAAGACAGGTTCGTAGCTGAAT 1673
```

```
Qy        1141 ACACCAAGTCTGAGGAGTTACCGCATCTAGATATCAAGAAGGACTTAGAAGAAGCTGAGC 1200
               ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        1674 ACACCAAGTCTGAGGAGTTACCGCATCTAGATATCAAGAAGGACTTAGAAGAAGCTGAGC 1733

Qy        1201 AAATGTACGACGCGTTATCAGAATTATCTATCCTTAAGGGTGCTGATAATTTCGATATCG 1260
               ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        1734 AAATGTACGACGCGTTATCAGAATTATCTATCCTTAAGGGTGCTGATAATTTCGATATCG 1793

Qy        1261 CGAAGTTCAAAGACATGTGCAAGGCTTTAGATGTTAGTCCTGATGTGGCAGCACGAGTAA 1320
               ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        1794 CGAAGTTCAAAGACATGTGCAAGGCTTTAGATGTTAGTCCTGATGTGGCAGCACGAGTAA 1853

Qy        1321 TCGTTGCAGTGGCCGAGAATAGAAGCGGTTTAACTCTTACTTTTGATAAGCCAACCGAGG 1380
               ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        1854 TCGTTGCAGTGGCCGAGAATAGAAGCGGTTTAACTCTTACTTTTGATAAGCCAACCGAGG 1913

Qy        1381 AGAATGTGGCTAAGGCTCTTAAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCGA 1440
               ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        1914 AGAATGTGGCTAAGGCTCTTAAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCGA 1973

Qy        1441 CATCCGAAGAGGTGAACGTAAATAAATTTTCTATTGCTGAGAAAGGGAGATTGCCTGTGT 1500
               ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        1974 CATCCGAAGAGGTGAACGTAAATAAATTTTCTATTGCTGAGAAAGGGAGATTGCCTGTGT 2033

Qy        1501 GTGCAGAAAGTCATGGTTTGACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTCA 1560
               ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        2034 GTGCAGAAAGTCATGGTTTGACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTCA 2093

Qy        1561 ACGATTTCCATAAGGCTTGCGTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTCT 1620
               ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        2094 ACGATTTCCATAAGGCTTGCGTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTCT 2153

Qy        1621 ACACTGGCTCACTCAAAGTTCAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCGT 1680
               ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        2154 ACACTGGCTCACTCAAAGTTCAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCGT 2213

Qy        1681 TGTCCGCCACTGTATCAAATCTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCTG 1740
               ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        2214 TGTCCGCCACTGTATCAAATCTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCTG 2273

Qy        1741 ATTCCAGGGAGAAAGTTGGTGTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCTG 1800
               ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        2274 ATTCCAGGGAGAAAGTTGGTGTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCTG 2333

Qy        1801 CGGCCAAAGGTCATTCATGGGGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCAC 1860
               ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        2334 CGGCCAAAGGTCATTCATGGGGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCAC 2393

Qy        1861 TTCTATCTTATGAAGGAGATAGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTAT 1920
               ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        2394 TTCTATCTTATGAAGGAGATAGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTAT 2453

Qy        1921 CATCTGATACAATGGTATATTCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATGA 1980
               ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        2454 CATCTGATACAATGGTATATTCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATGA 2513

Qy        1981 GAGACGGTGAACCCCACGAACCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGTT 2040
               ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        2514 GAGACGGTGAACCCCACGAACCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGTT 2573

Qy        2041 GTGGAAAGTACAAAGGAGATTTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTTC 2100
               ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        2574 GTGGAAAGTACAAAGGAGATTTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTTC 2633

Qy        2101 CTGGAAAACAAGCTGCTGCTATGATCAGAAGAAGGGCTAATTCATCTGGACTGATAAGAG 2160
               ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        2634 CTGGAAAACAAGCTGCTGCTATGATCAGAAGAAGGGCTAATTCATCTGGACTGATAAGAG 2693

Qy        2161 CCACAATGGACAATGTGAGAACGGTAGATTCACTTCTAATGCATCCAAAACCGCGATCAC 2220
               ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        2694 CCACAATGGACAATGTGAGAACGGTAGATTCACTTCTAATGCATCCAAAACCGCGATCAC 2753
```

```
Qy      2221 ACAAGAGGCTTTTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTTAACTTCCTGG 2280
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      2754 ACAAGAGGCTTTTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTTAACTTCCTGG 2813

Qy      2281 TGCTTATCTCTGGTTGCGACATCGCATACATTTACGGAGATACACAGCAGATTCCTTTCA 2340
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      2814 TGCTTATCTCTGGTTGCGACATCGCATACATTTACGGAGATACACAGCAGATTCCTTTCA 2873

Qy      2341 TTAACAGAGTTCAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAAGTGGATGAAG 2400
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      2874 TTAACAGAGTTCAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAAGTGGATGAAG 2933

Qy      2401 TTGAGATGAGGAGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTCCTACAATCGA 2460
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      2934 TTGAGATGAGGAGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTCCTACAATCGA 2993

Qy      2461 AGTACGAAGGAGCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCATCTGAGATGA 2520
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      2994 AGTACGAAGGAGCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCATCTGAGATGA 3053

Qy      2521 TAGGCGGTAAGGGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGGAAAATTGTAACTT 2580
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      3054 TAGGCGGTAAGGGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGGAAAATTGTAACTT 3113

Qy      2581 TCACTCAGGCTGATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTGAACACCGTTC 2640
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      3114 TCACTCAGGCTGATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTGAACACCGTTC 3173

Qy      2641 ATGAGATCCAAGGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACGGCAACTCCAC 2700
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      3174 ATGAGATCCAAGGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACGGCAACTCCAC 3233

Qy      2701 TGACTCTGATTTCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGACACACAAAGA 2760
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      3234 TGACTCTGATTTCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGACACACAAAGA 3293

Qy      2761 GCTTCAAATATTACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGTGATTTGTCTT 2820
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      3294 GCTTCAAATATTACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGTGATTTGTCTT 3353

Qy      2821 CTTTAAGCTCCTTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGATAGCAATTAC 2880
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      3354 CTTTAAGCTCCTTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGATAGCAATTAC 3413

Qy      2881 AGATGGATGCAGTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAATCAGGAGACT 2940
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      3414 AGATGGATGCAGTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAATCAGGAGACT 3473

Qy      2941 TTCCAGATCTACAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACTATACTTAACA 3000
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      3474 TTCCAGATCTACAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACTATACTTAACA 3533

Qy      3001 AGTATGATGCTGTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAGGATTGTGTTC 3060
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      3534 AGTATGATGCTGTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAGGATTGTGTTC 3593

Qy      3061 TTGATTTTTCCAAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTAGAGCCAGTTT 3120
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      3594 TTGATTTTTCCAAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTAGAGCCAGTTT 3653

Qy      3121 TGCGTACCGCGGCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTGGTTGCAATGA 3180
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      3654 TGCGTACCGCGGCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTGGTTGCAATGA 3713

Qy      3181 TTAAAAGAAATTTCAACGCACCAGACCTGACGGGGACGATTGACATTGAGAGCACCGCAT 3240
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      3714 TTAAAAGAAATTTCAACGCACCAGACCTGACGGGGACGATTGACATTGAGAGCACCGCAT 3773

Qy      3241 CTGTTGTAGTAGATAAGTTTTTGATAGCTATTTTATTAAAAAAGAAAAATACACAAAAA 3300
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      3774 CTGTTGTAGTAGATAAGTTTTTGATAGCTATTTTATTAAAAAAGAAAAATACACAAAAA 3833

Qy      3301 ATATTGCTGGAGTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAACAGGAAAGAAG 3360
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      3834 ATATTGCTGGAGTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAACAGGAAAGAAG 3893

Qy      3361 TACTATTGGACGACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATCGATCAGTACA 3420
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      3894 TACTATTGGACGACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATCGATCAGTACA 3953

Qy      3421 AGCACATGATCAAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAGAATGAATACC 3480
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      3954 AGCACATGATCAAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAGAATGAATACC 4013

Qy      3481 CTGCTCTGCAAACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTGGCCGGTTTCT 3540
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      4014 CTGCTCTGCAAACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTGGCCGGTTTCT 4073

Qy      3541 CAGAGCTTACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTTCTTTTCTTTACTA 3600
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      4074 CAGAGCTTACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTTCTTTTCTTTACTA 4133

Qy      3601 GGAAAACTCCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCGCACGTTCCTATGG 3660
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      4134 GGAAAACTCCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCGCACGTTCCTATGG 4193

Qy      3661 ATGTGTTAGAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAGTTTCATTGTGCTG 3720
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      4194 ATGTGTTAGAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAGTTTCATTGTGCTG 4253

Qy      3721 TAGAGTATGAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCCGAAGTGTGGAAAC 3780
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      4254 TAGAGTATGAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCCGAAGTGTGGAAAC 4313

Qy      3781 AAGGGCACAGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAGACATGTCTGTGGT 3840
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      4314 AAGGGCACAGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAGACATGTCTGTGGT 4373

Qy      3841 ATCAAAGGAAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTTATAATAGCAGCTT 3900
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      4374 ATCAAAGGAAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTTATAATAGCAGCTT 4433

Qy      3901 GCTTGGGTTCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTTTGTGGAGACGATT 3960
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      4434 GCTTGGGTTCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTTTGTGGAGACGATT 4493

Qy      3961 CCGTTTTGTATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCATGTGCTAATCTCA 4020
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      4494 CCGTTTTGTATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCATGTGCTAATCTCA 4553

Qy      4021 TGTGGAATTTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTTTGTGGTAGATACA 4080
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      4554 TGTGGAATTTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTTTGTGGTAGATACA 4613

Qy      4081 TCATACACCATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAGTTGATCTCCAAAC 4140
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      4614 TCATACACCATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAGTTGATCTCCAAAC 4673

Qy      4141 TTGGGGCAAAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGGGTGTCTTTGTGCG 4200
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      4674 TTGGGGCAAAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGGGTGTCTTTGTGCG 4733

Qy      4201 ATGTTGCTTGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTGAACGCAGCTATCA 4260
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      4734 ATGTTGCTTGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTGAACGCAGCTATCA 4793

Qy      4261 AGGAGGTTCATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGTGTTAACAAATTTT 4320
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      4794 AGGAGGTTCATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGTGTTAACAAATTTT 4853

Qy      4321 TGTGTGATAAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAGTCTCAGAGATACT 4380
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      4854 TGTGTGATAAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAGTCTCAGAGATACT 4913

Qy      4381 GTCAAAATTAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACTTCCGGCATTCATG 4440
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
```

```
Db        4914 GTCAAAATTAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACTTCCGGCATTCATG 4973

Qy        4441 ACTAAGGTCAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGCTGTTAAGAATGAT 4500
               ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        4974 ACTAAGGTCAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGCTGTTAAGAATGAT 5033

Qy        4501 AGTCTTTCTGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAAAGGGTATGTGTGC 4560
               ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        5034 AGTCTTTCTGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAAAGGGTATGTGTGC 5093

Qy        4561 TTAGCTGATTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTGCCGTGGTGGTGTC 4620
               ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        5094 TTAGCTGATTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTGCCGTGGTGGTGTC 5153

Qy        4621 AGTGTTTGTATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAACGCTGGGTGCGTAT 4680
               ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        5154 AGTGTTTGTATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAACGCTGGGTGCGTAT 5213

Qy        4681 CACGCCCCTGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAATTATTCAATAACA 4740
               ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        5214 CACGCCCCTGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAATTATTCAATAACA 5273

Qy        4741 TCCGAGGATGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAAAGGAGTGGCTATG 4800
               ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        5274 TCCGAGGATGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAAAGGAGTGGCTATG 5333

Qy        4801 GAAGAAGGATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGTAGTACATAAAAAT 4860
               ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        5334 GAAGAAGGATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGTAGTACATAAAAAT 5393

Qy        4861 AATGTAAGAAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGGCTCGCCAATTGAA 4920
               ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        5394 AATGTAAGAAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGGCTCGCCAATTGAA 5453

Qy        4921 CTCACTGAAAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGCTGTGA 4972
               ||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        5454 CTCACTGAAAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGCTGTGA 5505


RESULT 2
US-09-962-527-1
; Sequence 1, Application US/09962527
; Publication No. US20030049813A1
;   GENERAL INFORMATION:
;        APPLICANT: GARGER, STEPHEN
;                   HOLTZ, R. BARRY
;                   McCULLOCH, MICHAEL
;                   TURPEN, THOMAS
;        TITLE OF INVENTION: A PROCESS FOR ISOLATING AND
;                           PURIFYING VIRUSES SOLUBLE PROTEINS AND PEPTIDES
;                           FROM PLANT SOURCES
;        NUMBER OF SEQUENCES: 5
;        CORRESPONDENCE ADDRESS:
;            ADDRESSEE: Howrey & Simon
;            STREET: 1299 Pennsylvania Avenue N.W.
;            CITY: Washington
;            STATE: DC
;            COUNTRY: USA
;            ZIP: 20004
;        COMPUTER READABLE FORM:
;            MEDIUM TYPE: Diskette
;            COMPUTER: IBM Compatible
;            OPERATING SYSTEM: DOS
;            SOFTWARE: FastSEQ for Windows Version 2.0
;        CURRENT APPLICATION DATA:
;            APPLICATION NUMBER: US/09/962,527
;            FILING DATE: 24-Sep-2001
;            CLASSIFICATION: <Unknown>
;        PRIOR APPLICATION DATA:
;            APPLICATION NUMBER: 09/037,751
;            FILING DATE: 10-march-1998
;        ATTORNEY/AGENT INFORMATION:
;            NAME: Halluin, Albert P
;            REGISTRATION NUMBER: 25,277
;            REFERENCE/DOCKET NUMBER: 00801.0140.999
;        TELECOMMUNICATION INFORMATION:
;            TELEPHONE: 650-463-8109
;            TELEFAX: 650-463-8400
;            TELEX: <Unknown>
;    INFORMATION FOR SEQ ID NO: 1:
;        SEQUENCE CHARACTERISTICS:
;            LENGTH: 6395 base pairs
;            TYPE: nucleic acid
;            STRANDEDNESS: single
;            TOPOLOGY: unknown
;        MOLECULE TYPE: Genomic RNA
;        SEQUENCE DESCRIPTION: SEQ ID NO: 1:
US-09-962-527-1

  Query Match             40.9%;  Score 2034.2;  DB 10;  Length 6395;
  Best Local Similarity   44.4%;  Pred. No. 0;
  Matches 2214;  Conservative  957;  Mismatches 1793;  Indels   21;  Gaps    4;

Qy           6 AAGGTAATTCCTGAGTTTCAAAGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAA 65
               ||   | : ||  | :: |||| ||| || ::: |||| :| ||||||  :||  | ||
Db         537 AAAACAGUCCCCAACUUCCAAAAGGAAGCAUUUGACAGAUACGCAGAAAUUCCUGAAGAC 596

Qy          66 GTCTGCTGCTCTAAAACTTTTCAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGA 125
               |    |:|    || ||::: |||      |||   || |||    || |    || |||
Db         597 GCUGUCUGUCACAAUACUUUCCAGACAAUGCGACAUCAGCCGAUGCAGCAAUCAGGCAGA 656

Qy         126 AGATACGCTGTTGCTCTGCACAGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCG 185
                  :| ||  ::|| |: ||||| : :|:|| |: || |   |:|||:: || || ||
Db         657 GUGUAUGCCAUUGCGCUACACAGCAUAUAUGACAUACCAGCCGAUGAGUUCGGGGCGGCA 716

Qy         186 TTAATATCTAAGAATATACATGTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTA 245
                :  :    || ||: : ||:   :| :|:|| ||:: |   ::  | ||     :  :
Db         717 CUCUUGAGGAAAAAUGUCCAUACGUGCUAUGCCGCUUUCCACUUCUCCGAGAACCUGCUU 776

Qy         246 CTAGACCAGACGGAGGTTACGCTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGAT 305
               |: ||  |  |  | |: |   :  | ||||:   |||   :::     | || || ||
Db         777 CUUGAAGAUUCAUACGUCAAUUUGGACGAAAUCAACGCGUGUUUUUCGCGCGAUGGAGAC 836

Qy         306 GATGTTTCTTTTTTCTTTGCTGATGAAAGTACTTTAAATTATAGTCATAAATACAAAAAT 365
                |  :  | ::::  :::||    || ||:||: : ||::|: |:||:|  :|    ||:
Db         837 AAGUUGACCUUUUCUUUUGCAUCAGAGAGUACUCUUAAUUAUUGUCAUAGUUAUUCUAAU 896

Qy         366 ATCTTGCATTATGTAGTTAAATCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAG 425
               |:  :  | :|:|:    ||| |::||:: || || :|:| :|||   |:::|| : |||
Db         897 AUUCUUAAGUAUGUGUGCAAAACUUACUUCCCGGCCUCUAAUAGAGAGGUUUACAUGAAG 956

Qy         426 GAATTTTTAGTCACTAGGGTTAATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTAT 485
               || :::::||:||| || |::||:|| :||::::|:|| ::: | | | :|||:|| : :
Db         957 GAGUUUUUAGUCACCAGAGUUAAUACCUGGUUUUGUAAGUUUUCUAGAAUAGAUACUUUU 1016

Qy         486 ATTCTGTACAAGAGTGTTAGACAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATG 545
                :: :|:||||  |:|:    ||   | |    ||:||:|| |||:: :|:   || |:|
Db        1017 CUUUUGUACAAAGGUGUGGCCCAUAAAAGUGUAGAUAGUGAGCAGUUUUAUACUGCAAUG 1076

Qy         546 GAAGACGCCTTTGCTTACAAGAAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTT 605
               |||||||| :    ::|||| || ||  : || |:|: |||||  || |||    :| ::
Db        1077 GAAGACGCAUGGCAUUACAAAAAGACUCUUGCAAUGUGCAACAGCGAGAGAAUCCUCCUU 1136

Qy         606 AGAGACACGGCTTCGGTTAACTTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCG 665
                  ||  |  | :| |: || :  :||:: || || |:|| ||| |:||: |: |:|||
Db        1137 GAGGAUUCAUCAUCAGUCAAUUACUGGUUUCCCAAAAUGAGGGAUAUGGUCAUCGUACCA 1196

Qy         666 CTGTTTGAGGGTTCTATTACCAGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGT 725
                : :: ||   ::|: :    |  |  |||| |||  | |  || |:| : |:
Db        1197 UUAUUCGACAUUUCUUUGGAGACUAGUAAGAGGACGCGCAAGGAAGUCUUAGUGUCCAAG 1256

Qy         726 GACTTCGTTTACACAGTGCTTAATCATATCAGAACATATCAAGCCAAAGCGTTAACTTAC 785
               || ::||: :  ||||:||::|| || |:  |||||:| || || |||||  : || :||
Db        1257 GAUUUCGUGUUUACAGUGCUUAACCACAUUCGAACAUACCAGGCGAAAGCUCUUACAUAC 1316

Qy         786 CAGAACGTATTATCTTTCGTGGAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACT 845
```

```
                   || |: :: :|  : |: || :| |:  ||:|  | |: |: |: || ||:|: ||
Db       1317 GCAAAUGUUUUGUCCCUUGUCGAAUCGAUUCGAUCGAGGGUAAUCAUUAACGGUGUGACA 1376

Qy        846 GCTAGGTCTGAATGGATGTAGATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTC 905
              || |||:| |||:||||:|:  || ||| |  :  : ||| ||::|:| |:||| :: : |
Db       1377 GCGAGGUCCGAAUGGGAUGUGGACAAAUCUUUGUUACAAUCCUUGUCCAUGACGUUUUAC 1436

Qy        906 TTGCAGACTAAGCTGGCTGCGCTTCAAGACGATATAGTAATGGAAAGTTTCGGTGCTTG 965
               :||| ||:||||: || |  |:  | || ||  :| : |:  | |||::: |   |
Db       1437 CUGCAUACUAAGCUUGCCGUUCUAAAGGAUGACUUACUGAUUAGCAAGUUUAGUCUCGGU 1496

Qy        966 GATAAGACCACTTCTGAACTTATTTGGATGAGGTGGCAAATTTTTTGGAAACGTTTTC 1025
                 || ||    :   | | : : :||||:||| :          :::|| ||||  ::
Db       1497 UCGAAAACGGUGUGCCAGCAUGUGUGGGAUGAGAUUUCGCUGGCGUUUGGGAACGCAUUU 1556

Qy       1026 CCCACTATCAAAGAGAGATTGGTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTG 1085
              ||| |  : ||||||||| :  :|| ||||||| :: :    |:    |   | ||  :
Db       1557 CCCUCCGUGAAAGAGAGACUCUUGAACAGGAAACUUAUCAGAGUGGCAGGCGACGCAUUA 1616

Qy       1086 AAGATCAAGATCCCAGATCTGTATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACC 1145
               |||:|| | : || ||:|: :|:|: || :   | ||||| :: |:  |:|| :|||
Db       1617 GAGAUCAGGGUGCCUGAUCUAUAUGUGACCUUCCACGACAGAUUAGUGACUGAGUACAAG 1676

Qy       1146 AAGTCTGAGGAGTTACCGCATCTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATG 1205
                 :|:| |||  : ||    |: || |: | |||| |  : |||||| | ||    |:|
Db       1677 GCCUCUGUGGACAUGCCUGCGCUUGACAUUAGGAAGAAGAUGGAAGAAACGGAAGUGAUG 1736

Qy       1206 TACGACGCGTTATCAGAATTATCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAG 1265
              :|| | ||  : :|||| ::|:|  :  : | ||   |:|| || ::|||: : |
Db       1737 UACAAUGCACUUUCAGAGUUAUCGGUGUUAAGGGAGUCUGACAAAUUCGAUGUUGAUGUU 1796

Qy       1266 TTCAAAGACATGTGCAAGGCTTTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTT 1325
              ::     | |:|:|| |  |::: |||::    ||      ||||||    |: |: |:
Db       1797 UUUUCCCAGAUGUGCCAAUCUUUGGAAGUUGACCCAAUGACGGCAGCGAAGGUUAUAGUC 1856

Qy       1326 GCAGTGGCCGAGAATAGAAGCGGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAAT 1385
              || |:       ||:   |||||: : ||:|: || :::||    || || |||| |||:
Db       1857 GCGGUCAUGAGCAAUGAGAGCGGUCUGACUCUCACAUUUGAACGACCUACUGAGGCGAAU 1916

Qy       1386 GTGGCTAAGGCTCT------TAAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCG 1439
              |: ||    ||: :      :| |   | ||| :| || |  |   :     ::    |
Db       1917 GUUGCGCUAGCUUUACAGGAUCAAGAGAAGGCUUCAGAAGGUGCAUUGGUAGUUACCUCA 1976

Qy       1440 ACATCCGAAGAGGTGAACGTAAATAAATTTTCTATTGCTGAGAAAGGAGATTGCCTGTG 1499
              | |   |  || |        |  ||   ::| |: ||      || |  |      |
Db       1977 AGAGAAGUUGAAGAACCGUCCAUGAAGGGUUCGAUGGCCAGAGGAGAGUUACAAUUAGCU 2036

Qy       1500 TGTGCAGAAAGTCATGGTTTGACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTC 1559
               |:   |   |  |:  :  |  |    |  | :   || || ||||| : |||:|  :
Db       2037 GGUCUUGCUGGAGAUCAUCCGGAGUCGUCCUAUUCUAAGAACGAGGAGAUAGAGUCUUUA 2096

Qy       1560 AACGATTTCCATAAGGCTTGCGTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTC 1619
               |  | :: ||:| |||    |  ||:    : |::   ||||| |:|   :|| ::|:
Db       2097 GAGCAGUUUCAUAUGGCGACGGCAGAUUCGUUAAUUCGUAAGCAGAUGAGCUCGAUUGUG 2156

Qy       1620 TACACTGGCTCACTCAAAGTTCAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCG 1679
              :|||| ||  |  : |||::||  ||||:||| |||: : : || ||  :|| ||| :|
Db       2157 UACACGGGUCCGAUUAAAGUUCAGCAAAUGAAAAACUUUAUCGAUAGCCUGGUAGCAUCA 2216

Qy       1680 TTGTCCGCCACTGTATCAAATCTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCT 1739
               : :| ||  | |: :| ||:|:   ||||   |: || ||:  ||  |    :||   :
Db       2217 CUAUCUGCUGCGGUGUCGAAUCUCGUCAAGAUCCUCAAAGAUACAGCUGCUAUUGACCUU 2276

Qy       1740 GATTCCAGGGAGAAAGTTGGTGTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCT 1799
              ||  || |  | ||  ::|| |: : |||:|:  | :  |  |||:|| :  :||||||
Db       2277 GAAACCCGUCAAAAGUUUGGAGUCUUGGAUGUUGCAUCUAGGAAGUGGUUAAUCAAACCA 2336

Qy       1800 GCGGCCAAAGGTCATTCATGGGGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCA 1859
               |||||||  |:||: ||:|||| |::|:        ||  | ||||      :   ||
Db       2337 ACGGCCAAGAGUCAUGCAUGGGGUGUUGUUGAAACCCACGCGAGGAAGUAUCAUGUGGCG 2396

Qy       1860 CTTCTATCTTATGAAGGAGATAGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTA 1919
              |:: :    :|:|| |   |  |  :||:|||       || :|||| || |: ||:|:
Db       2397 CUUUUGGAAUAUGAUGAGCAGGGUGUGGUGACAUGCGAUGAUUGGAGAAGAGUAGCUGUU 2456

Qy       1920 TCATCTGATACAATGGTATATTCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATG 1979
                 :|:||  |  : |: :|::| || |: || || |:|  || :|:| | | |    :
Db       2457 AGCUCUGAGUCUGUUGUUUAUUCCGACAUGGCGAAACUCAGAACUCUGCGCAGACUGCUU 2516

Qy       1980 AGAGACGGTGAACCCCACGAACCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGT 2039
               || |||| ||||| || |    :|  |||||| : |: |::|:||| || |: || ||
Db       2517 CGAAACGGAGAACCGCAUGUCAGUAGCGCAAAGGUUGUUCUUGUGGACGGAGUUCCGGGC 2576

Qy       2040 TGTGGAAAGTACAAAGGAGATTTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTT 2099
              :|:|||||   ||||| |  : ::   ||  :: |: ::||:|| ||: : |: :: |:
Db       2577 UGUGGAAAAACCAAAGAAAUUCUUUCCAGGGUUAAUUUUGAUGAAGAUCUAAUUUUAGUA 2636

Qy       2100 CCTGGAAAACAAGCTGCTGCTATGATCAGAAGAAGGGCTAATTCATCTGGACTGATAAGA 2159
              ||:|| || ||||| || |  |:||:||||||| | || ||::| :| ||  : |:
Db       2637 CCUGGGAAGCAAGCCGCGGAAAUGAUCAGAAGACGUGCGAAUUCCUCAGGGAUUAUUGUG 2696

Qy       2160 GCCACAATGGACAATGTGAGAACGGTAGATTCACTTCTAATGCAT---------CCAAAA 2210
              ||||| | |||||| |: | ||| |: |::|   :  : |:| |:            | |
Db       2697 GCCACGAAGGACAACGUUAAAACCGUUGAUUCUUUCAUGAUGAAUUUUGGGAAAAGCACA 2756

Qy       2211 CCGCGATCACACAAGAGGCTTTTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTT 2270
              |   |      ||||||| : :: |::||:|||||::||:| :||| || ||::|:|::
Db       2757 CGCUGUCAGUUCAAGAGGUUAUUCAUUGAUGAAGGGUUGAUGUUGCAUACUGGUUGUGUU 2816

Qy       2271 AACTTCCTGGTGCTTATCTCTGGTTGCGACATCGCATACATTTACGGAGATACACAGCAG 2330
              || :: |: |:|   |: :|    :|||| |: |||:|  :::||||||| |||||||||
Db       2817 AAUUUUCUUGUGGCGAUGUCAUUGUGCGAAAUUGCAUAUGUUUACGGAGACACACAGCAG 2876

Qy       2331 ATTCCTTTCATTAACAGAGTTCAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAA 2390
              |::|| : ||: || ||||::      ::||||:| |||   ||::::|  ||  :| ||
Db       2877 AUUCCAUACAUCAAUAGAGUUUCAGGAUUCCCGUACCCCGCCCAUUUUGCCAAAUUGGAA 2936

Qy       2391 GTGGATGAAGTTGAGATGAGGAGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTC 2450
              |: || || |: ||||   | || || || |:  | :| ||||  ||:|: |    ::
Db       2937 GUUGACGAGGUGGAGACACGCAGAACUACUCUCCGUUGUCCAGCCGAUGUCACACAUUAU 2996

Qy       2451 CTACAATCGAAGTACGAAGGAGCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCA 2510
              |:  |   ||  :| || ||    |: |  | ||::|   | |:  ||   :| |: :|
Db       2997 CUGAACAGGAGAUAUGAGGGCUUUGUCAUGAGCACUUCUUCGGUUAAAAAGUCUGUUUCG 3056

Qy       2511 TCTGAGATGATAGGCGGTAAGGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGGAAA 2570
                 ||||:| : |||||    |  |:  : ||     : :| |||||  :  | || ||
Db       3057 CAGGAGAUGGUCGGCGGAGCCGCCGUGAUCAAUCCGAUCUCAAAACCCUUGCAUGGCAAG 3116

Qy       2571 ATTGTAACTTTCACTCAGGCTGATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTG 2630
              |:  : ||::: || ||  | ||:|||   |   :       |  || :|:    |:|:
Db       3117 AUCCUGACUUUUACCCAAUCGGAUAAAGAAGCUCUGCUUUCAAGAGGGUAUUCAGAUGUU 3176

Qy       2631 AACACCGTTCATGAGATCCAAGGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACG 2690
               |||| |: ||:||  : ||||| || || :     ||:|: :| |: |: || :: ||
Db       3177 CACACUGUGCAUGAAGUGCAAGGCGAGACAUACUCUGAUGUUUCACUAGUUAGGUUAACC 3236

Qy       2691 GCAACTCCACTGACTCTGATTTCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGA 2750
               | || ||| :  |  : |:: |         ||| ||:|:: : |:|||  :| | ||
Db       3237 CCUACACCAGUCUCCAUCAUUGCAGGAGACAGCCCACAUGUUUUGGUCGCAUUGUCAAGG 3296

Qy       2751 CACACAAAGAGCTTCAAATATTACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGT 2810
              |||||        :||| :| :|||| |: |:  : ||:||:::||:    |: |::||
Db       3297 CACACCUGUUCGCUCAAGUACUACACUGUUGUUAUGGAUCCUUUAGUUAGUAUCAUUAGA 3356

Qy       2811 GATTTGTCTTCTTTAAGCTCCTTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGA 2870
              ||: :        : |||:| : | : ::||| |:|:|:| ||: || ||||| |    |
Db       3357 GAUCUAGAGAAACUUAGCUCGUACUUGUUAGAUAUGUAUAAGGUCGAUGCAGGAACACAA 3416

Qy       2871 TAGCAATTACAGATGGATGCAGTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAA 2930
              :|||||::|||||: ||  | |:|::||||||:   ||:|: :::|: ||| | || ||
Db       3417 UAGCAAUUACAGAUUGACUCGGUGUUCAAAGGUUCCAAUCUUUUUGUUGCAGCGCCAAAG 3476

Qy       2931 TCAGGAGACTTTCCAGATCTACAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACT 2990
               | || ||  :: | ||: : |||:: :| :| ||:   :| |:||| || || || ||
Db       3477 ACUGGUGAUAUUUCUGAUAUGCAGUUUUACUAUGAUAAGUGUCUCCCAGGCAACAGCACC 3536
```

```
Qy        2991 ATACTTAACAAGTATGATGCTGTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAG 3050
               |:  : || || : :||:||:|::||||:||||::   :|| | :    : ||:|: ||
Db        3537 AUGAUGAAUAAUUUUGAUGCUGUUACCAUGAGGUUGACUGACAUUUCAUUGAAUGUCAAA 3596

Qy        3051 GATTGTGTTCTTGATTTTTCCAAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTA 3110
               ||::|  :  : ||: : :| ||   : ::|    ||| |||||    |    |   |:|
Db        3597 GAUUGCAUAUUGGAUAUGUCUAAGUCUGUUCGUGCGCCUAAGGAUCAAAUCAAACCACUA 3656

Qy        3111 GAGCCAGTTTTGCGTACCGCGGCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTG 3170
                  ||  :  : || || ||||| |||  |||| |     | ||||:| : |||||: :
Db        3657 AUACCUAUGGUACGAACGGCGGCAGAAAUGCCACGCCAGACUGGACUAUUGGAAAAUUUA 3716

Qy        3171 GTTGCAATGATTAAAAGAAATTTCAACGCACCAGACCTGACGGGGACGATTGACATTGAG 3230
               |: || |:||::|||||||| :: |||||||| ||  :| | || |  |::|| |::||
Db        3717 GUGGCGAUGAUUAAAAGAAACUUUAACGCACCCGAGUUGUCUGGCAUCAUUGAUAUUGAA 3776

Qy        3231 AGCACCGCATCTGTTGTAGTAGATAAGTTTTTGATAGCTATTTTATTAAAAAAGAAAAAA 3290
               |  || |||:|: : |: |:|||:|||:::::||:|| :|:::  ::||| || |||| |
Db        3777 AAUACUGCAUCUUUGGUUGUAGAUAAGUUUUUGAUAGUUAUUUGCUUAAAGAAAAAAAGA 3836

Qy        3291 TACACAAAAAATATTGCTGGAGTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAAC 3350
                |  |||| || |:   :    :| : |  |  || :|  : |  |||:||:: |||||
Db        3837 AAACCAAAUAAAAAUGUUUCUUUGUUCAGUAGAGAGUCUCUCAAUAGAUGGUUAGAAAAG 3896

Qy        3351 AGGAAAGAAGTACTATTGGACGACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATC 3410
                 | || | |:|  | : | | |  : ||  | :   |::::   ||: :||| ||  :
Db        3897 CAGGAACAGGUAACAAUAGGCCAGCUCGCAGAUUUUGAUUUUGUGGAUUUGCCAGCAGUU 3956

Qy        3411 GATCAGTACAAGCACATGATCAAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAG 3470
               ||:|||:|||  ||||:||: || || |||||| ||||| || ::||||  ::|||: ||
Db        3957 GAUCAGUACAGACACAUGAUUAAAGCACAACCCAAACAAAAGUUGGACACUUCAAUCCAA 4016

Qy        3471 AATGAATACCCTGCTCTGCAAACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTG 3530
               |  || :|||| ||: :||| || |::|: :||||::| ||  |||:||| |  |: ::
Db        4017 ACGGAGUACCCGGCUUUGCAGACGAUUGUGUACCAUUCAAAAAAGAUCAAUGCAAUAUUC 4076

Qy        3531 GCCGGTTTCT---CAGAGCTTACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTT 3587
               | |   :: :     ||||::|| |||    : |: ||     ::||::| |  | |:::
Db        4077 GGCCCGUUGUUUAGUGAGCUUACUAGGCAAUUACUGGACAGUGUUGAUUCGAGCAGAUUU 4136

Qy        3588 CTTTTCTTTACTAGGAAAACTCCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCG 3647
                : :: :: || || || || ||||  ||||:: | || :: ::|   ||:|:||||
Db        4137 UUGUUUUUCACAAGAAAGACACCAGCGCAGAUUGAGGAUUUCUUCGGAGAUCUCGACAGU 4196

Qy        3648 CACGTTCCTATGGATGTGTTAGAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAG 3707
               || |: || |:|||:|: :: || |:|||:| : | || :| || || :| ||||| ||
Db        4197 CAUGUGCCGAUGGAUGUCUUGGAGCUGGAUAUAUCAAAAUACGACAAAUCUCAGAAUGAA 4256

Qy        3708 TTTCATTGTGCTGTAGAGTATGAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCC 3767
               :: || :|:|| |:||| :| || |: :||  ||||::|||: :  | ||  :: ::||
Db        4257 UUCCACUGUGCAGUAGAAUACGAGAUCUGGCGAAGAUUGGGUUUUGAAGACUUCUUGGGA 4316

Qy        3768 GAAGTGTGGAAACAAGGGCACAGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAG 3827
               ||||: :||||||||||||| || || || ||  : |||||::| |  ||  || |: ||
Db        4317 GAAGUUUGGAAACAAGGGCAUAGAAAGACCACCCUCAAGGAUUAUACCGCAGGUAUAAAA 4376

Qy        3828 ACATGTCTGTGGTATCAAAGGAAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTT 3887
               || :|  : :||:|:||||| || ||||| || |: || || ::||: || || ||:|:
Db        4377 ACUUGCAUCUGGUAUCAAAGAAAGAGCGGGGACGUCACGACGUUCAUUGGAAACACUGUG 4436

Qy        3888 ATAATAGCAGCTTGCTTGGGTTCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTT 3947
               |: |: || || :| ::||  :| |:| : ||||:||| ||  : |: |||| || :::
Db        4437 AUCAUUGCUGCAUGUUUGGCCUCGAUGCUUCCGAUGGAGAAAAUAAUCAAAGGAGCCUUU 4496

Qy        3948 TGTGGAGACGATTCCGTTTTGTATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCA 4007
               :| || |||||:    :  :|:| :::||||||||::  || :: || ||  : ||
Db        4497 UGCGGUGACGAUAGUCUGCUGUACUUUCCAAAGGGUUGUGAGUUUCCGGAUGUGCAACAC 4556

Qy        4008 TGTGCTAATCTCATGTGGAATTTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTT 4067
               :  || ||:|: |:|:||||::::|| || ||||:|: :| |||   |:| || :||:::
Db        4557 UCCGCGAAUCUUAUGUGGAAUUUUGAAGCAAAACUGUUUAAAAAACAGUAUGGAUACUUU 4616

Qy        4068 TGTGGTAGATACATCATACACCATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAG 4127
               :| || |||:|  : |:||| || || |  |||   |: |:|:|::| ||:||  : |||
Db        4617 UGCGGAAGAUAUGUAAUACAUCACGACAGAGGAUGCAUUGUGUAUUACGAUCCCCUAAAG 4676

Qy        4128 TTGATCTCCAAACTTGGGGCAAAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGG 4187
               ::||:|:| ||||::|| || ||||| |:||||||::  || |||:: || |||:: ||
Db        4677 UUGAUCUCGAAACUUGGUGCUAAACACAUCAAGGAUUGGGAACACUUGGAGGAGUUCAGA 4736

Qy        4188 GTGTCTTTGTGCGATGTTGCTTGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTG 4247
                 |:|: : :| ||:|::||:  ::|| :    |||   :|       :   | ||| :|
Db        4737 AGGUCUCUUUGUGAUGUUGCUGUUUCGUU---GAACAAUUGUGCGUAUUACACACAGUUG 4793

Qy        4248 AACGCAGCTATCAAGGAGGTTCATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGT 4307
                |||  ||: :   |||||::||:|| |||||   :   ||::||:::| :: :||  |:
Db        4794 GACGACGCUGUAUGGGAGGUUCAUAAGACCGCCCCUCCAGGUUCGUUUGUUUAUAAAAGU 4853

Qy        4308 GTTAACAAATTTTTGTGTGATAAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAG 4367
                :    || : :::|: :||:||| :: : :::|||| :::|::: :| |:|||: :
Db        4854 CUGGUGAAGUAUUUGUCUGAUAAAGUUCUUUUUAGAAGUUUGUUUAUAGAUGGCUCUAGU 4913

Qy        4368 TCTCAGAGATACTGTCAAAATTAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACT 4427
               : : | ||  |  |: || |: |  |||:: |: || |: :| |||  ||  |||:  :
Db        4914 UGUUAAAGGAAAAGUGAAUAUCAAUGAGUUUAUCGACCUGUCAAAAAUGGAGAAGAUCUU 4973

Qy        4428 TCCGGCATTCATGACTAAGGTCAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGC 4487
                ||| |  :  : ||    |: |||||:|::|     :| |  |: || || |: |:||
Db        4974 ACCGUCGAUGUUUACCCCUGUAAAGAGUGUUAUGUGUUCCAAAGUUGAUAAAAUAAUGGU 5033

Qy        4488 TGTTAAGAATGATAGTCTTTCTGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAA 4547
               :  : ||||:||     : :| || |:  |  : |::||||| |::||| :  :: | |
Db        5034 UCAUGAGAAUGAGUCAUUGUCAGAGGUGAACCUUCUUAAAGGAGUUAAGCUUAUUGAUAG 5093

Qy        4548 AGGGTATGTGTGCTTAGCTGATTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTG 4607
                || :| |: :| ::||| | :::||: |:  | || |||:||||  : || || || :|
Db        5094 UGGAUACGUCUGUUUAGCCGGUUUGGUCGUCACGGGCGAGUGGAACUUGCCUGACAAUUG 5153

Qy        4608 CCGTGGTGGTGTCAGTGTTTGTATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAAC 4667
               | | || ||:|: || |: :|: : |: || || || |:| ||||     | || || ||
Db        5154 CAGAGGAGGUGUGAGCGUGUGUCUGGUGGACAAAAGGAUGGAAAGAGCCGACGAGGCCAC 5213

Qy        4668 GCTGGGTGCGTATCACGCCCCTGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAA 4727
                |: ||  | :|  || |  | ||:   ||| | ||  :::|  :: || :  : || ||
Db        5214 UCUCGGAUCUUACUACACAGCAGCUGCAAAGAAAAGAUUUCAGUUCAAGGUCGUUCCCAA 5273

Qy        4728 TTATTCAATAACATCCGAGGATGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAA 4787
               ::|: | |:|||  || ||||| ||   |||  ||   :||||||: ::||: ||:|: |
Db        5274 UUAUGCUAUAACCACCCAGGACGCGAUGAAAAACGUCUGGCAAGUUUUAGUUAAUAUUAG 5333

Qy        4788 AGGAGTGGCTATGGAAGAAGGATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGT 4847
               |   |:|   |:|  ||  || : |:|:||  : :|: :||||:: |: :|  : :|: :
Db        5334 AAAUGUGAAGAUGUCAGCGGGUUUCUGUCCGCUUUCUCUGGAGUUUGUGUCGGUGUGUAU 5393

Qy        4848 AGTACATAAAAATAATGTAAGAAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGG 4907
                |:  |:| |||:||: :|| |  |||:::||| ||    |::   |  |:|| ||||||
Db        5394 UGUUUAUAGAAAUAAUAUAAAAUUAGGUUUGAGAGAGAAGAUUACAAACGUGAGAGACGG 5453

Qy        4908 CTCGCCAATTGAACTCACTGAAAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGC 4967
                  ||| |: ||||: || ||| | |: |:|| |||::| :||| || |: || |:| |
Db        5454 AGGGCCCAUGGAACUUACAGAAGAAGUCGUUGAUGAGUUCAUGGAAGAUGUCCCUAUGUC 5513

Qy        4968 TGTGA 4972
                 : |
Db        5514 GAUCA 5518

RESULT 3
US-10-828-029-1
; Sequence 1, Application US/10828029
; Publication No. US20040171813A1
;   GENERAL INFORMATION:
;        APPLICANT: GARGER, STEPHEN
;                   HOLTZ, R. BARRY
;                   McCULLOCH, MICHAEL
```

```
;                 TURPEN, THOMAS
;        TITLE OF INVENTION: A PROCESS FOR ISOLATING AND
;                        PURIFYING VIRUSES SOLUBLE PROTEINS AND PEPTIDES
;                        FROM PLANT SOURCES
;        NUMBER OF SEQUENCES: 5
;        CORRESPONDENCE ADDRESS:
;            ADDRESSEE: Howrey & Simon
;            STREET: 1299 Pennsylvania Avenue N.W.
;            CITY: Washington
;            STATE: DC
;            COUNTRY: USA
;            ZIP: 20004
;        COMPUTER READABLE FORM:
;            MEDIUM TYPE: Diskette
;            COMPUTER: IBM Compatible
;            OPERATING SYSTEM: DOS
;            SOFTWARE: FastSEQ for Windows Version 2.0
;        CURRENT APPLICATION DATA:
;            APPLICATION NUMBER: US/10/828,029
;            FILING DATE: 20-Apr-2004
;            CLASSIFICATION: <Unknown>
;        PRIOR APPLICATION DATA:
;            APPLICATION NUMBER: US/09/962,527
;            FILING DATE: 24-Sep-2001
;            APPLICATION NUMBER: 09/037,751
;            FILING DATE: 10-march-1998
;        ATTORNEY/AGENT INFORMATION:
;            NAME: Halluin, Albert P
;            REGISTRATION NUMBER: 25,277
;            REFERENCE/DOCKET NUMBER: 00801.0140.999
;        TELECOMMUNICATION INFORMATION:
;            TELEPHONE: 650-463-8109
;            TELEFAX: 650-463-8400
;            TELEX: <Unknown>
;    INFORMATION FOR SEQ ID NO: 1:
;        SEQUENCE CHARACTERISTICS:
;            LENGTH: 6395 base pairs
;            TYPE: nucleic acid
;            STRANDEDNESS: single
;            TOPOLOGY: unknown
;        MOLECULE TYPE: Genomic RNA
;        SEQUENCE DESCRIPTION: SEQ ID NO: 1:
US-10-828-029-1

  Query Match             40.9%;  Score 2034.2;  DB 19;  Length 6395;
  Best Local Similarity   44.4%;  Pred. No. 0;
  Matches 2214;  Conservative  957;  Mismatches 1793;  Indels   21;  Gaps    4;

Qy           6 AAGGTAATTCCTGAGTTTCAAAGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAA 65
               ||   | : ||  | :: |||| ||| || ::: |||| :| ||||||  :||  | ||
Db         537 AAAACAGUCCCCAACUUCCAAAAGGAAGCAUUUGACAGAUACGCAGAAAUUCCUGAAGAC 596

Qy          66 GTCTGCTGCTCTAAAACTTTTCAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGA 125
               |    |:|    || ||::: |||      |||   || |||    || |    || |||
Db         597 GCUGUCUGUCACAAUACUUUCCAGACAAUGCGACAUCAGCCGAUGCAGCAAUCAGGCAGA 656

Qy         126 AGATACGCTGTTGCTCTGCACAGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCG 185
                  :| ||  ::|| |: |||||  : :|:|| |: || |   |:|||:: || || ||
Db         657 GUGUAUGCCAUUGCGCUACACAGCAUAUAUGACAUACCAGCCGAUGAGUUCGGGGCGGCA 716

Qy         186 TTAATATCTAAGAATATACATGTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTA 245
                :  :    || ||: : ||:   :| :|:|| ||:: |   ::  | ||     :  :
Db         717 CUCUUGAGGAAAAAUGUCCAUACGUGCUAUGCCGCUUUCCACUUCUCCGAGAACCUGCUU 776

Qy         246 CTAGACCAGACGGAGGTTACGCTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGAT 305
               |: ||  |  |  | |: |   :  | ||||:   |||   :::     | || || ||
Db         777 CUUGAAGAUUCAUACGUCAAUUUGGACGAAAUCAACGCGUGUUUUUCGCGCGAUGGAGAC 836

Qy         306 GATGTTTCTTTTTCTTTGCTGATGAAAGTACTTTAAATTATAGTCATAAATACAAAAAT 365
                |  :  | ::::  :::||    || ||:||: : ||::|: |:||:|  :|    ||:
Db         837 AAGUUGACCUUUUCUUUUGCAUCAGAGAGUACUCUUAAUUAUUGUCAUAGUUAUUCUAAU 896

Qy         366 ATCTTGCATTATGTAGTTAAATCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAG 425
               |:  :  | :|:|:    ||| |::||:: || || :|:| :|||   |:::|| : |||
Db         897 AUUCUUAAGUAUGUGUGCAAAACUUACUUCCCGGCCUCUAAUAGAGAGGUUUACAUGAAG 956

Qy         426 GAATTTTTAGTCACTAGGGTTAATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTAT 485
               || :::::||:||| || |::|:||  :||::::|:|| ::: | | | :|||:|| : :
Db         957 GAGUUUUUAGUCACCAGAGUUAAUACCUGGUUUUGUAAGUUUUCUAGAAUAGAUACUUUU 1016

Qy         486 ATTCTGTACAAGAGTGTTAGACAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATG 545
                :: :|:||||  |:|:    ||   | |    ||:||:|| |||:: :|:   || |:|
Db        1017 CUUUUGUACAAAGGUGUGGCCCAUAAAAGUGUAGAUAGUGAGCAGUUUUAUACUGCAAUG 1076

Qy         546 GAAGACGCCTTTGCTTACAAGAAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTT 605
               |||||||| :    ::|||| || ||  : || |:|: |||||  || |||    :| ::
Db        1077 GAAGACGCAUGGCAUUACAAAAAGACUCUUGCAAUGUGCAACAGCGAGAGAAUCCUCCUU 1136

Qy         606 AGAGACACGGCTTCGGTTAACTTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCG 665
                  ||  |  | :| |: || :  :||:: || || |:|| ||| |:||: |: |:|||
Db        1137 GAGGAUUCAUCAUCAGUCAAUUACUGGUUUCCCAAAAUGAGGGAUAUGGUCAUCGUACCA 1196

Qy         666 CTGTTTGAGGGTTCTATTACCAGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGT 725
                : :: ||   ::|: :    |  | ||||  |||  | |  || |:| : |:
Db        1197 UUAUUCGACAUUUCUUUGGAGACUAGUAAGAGGACGCGCAAGGAAGUCUUAGUGUCCAAG 1256

Qy         726 GACTTCGTTTACACAGTGCTTAATCATATCAGAACATATCAAGCCAAAGCGTTAACTTAC 785
               || ::||: :  ||||:||::|| || |:  |||||:| || || |||||  : || :||
Db        1257 GAUUUCGUGUUUACAGUGCUUAACCACAUUCGAACAUACCAGGCGAAAGCUCUUACAUAC 1316

Qy         786 CAGAACGTATTATCTTTCGTGGAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACT 845
                  || |: :: :|  : |: || :| |:  ||:|  | |: |: |: || ||:|: ||
Db        1317 GCAAAUGUUUUGUCCCUUGUCGAAUCGAUUCGAUCGAGGGUAAUCAUUAACGGUGUGACA 1376

Qy         846 GCTAGGTCTGAATGGGATGTAGATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTC 905
               || |||:| |||:||||:|: || ||| |  :  : ||| ||::|:| |:||| :: : |
Db        1377 GCGAGGUCCGAAUGGGAUGUGGACAAAUCUUUGUUACAAUCCUUGUCCAUGACGUUUUAC 1436

Qy         906 TTGCAGACTAAGCTGGCTGCGCTTCAAGACGATATAGTAATGGAAAGTTTCGGTGCTTG 965
                :||| ||:||||: || |  |:  | || ||  :| : |:  | |||::: |   |
Db        1437 CUGCAUACUAAGCUUGCCGUUCUAAAGGAUGACUUACUGAUUAGCAAGUUUAGUCUCGGU 1496

Qy         966 GATAAGACCACTTCTGAACTTATTTGGATGAGGTGGCAAATTTTTTGGAAACGTTTTC 1025
                  || ||    :   | | : : :||||:||| :          :::|| ||||  ::
Db        1497 UCGAAAACGGUGUGCCAGCAUGUGUGGGAUGAGAUUUCGCUGGCGUUUGGGAACGCAUUU 1556

Qy        1026 CCCACTATCAAAGAGAGATTGGTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTG 1085
               ||| |  : ||||||||| :  :|| ||||||| :: :    |:    |   | ||  :
Db        1557 CCCUCCGUGAAAGAGAGACUCUUGAACAGGAAACUUAUCAGAGUGGCAGGCGACGCAUUA 1616

Qy        1086 AAGATCAAGATCCCAGATCTGTATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACC 1145
                |||:|| | : || ||:|: :|:|: || :   | ||||| :: |:  |:|| :|||
Db        1617 GAGAUCAGGGUGCCUGAUCUAUAUGUGACCUUCCACGACAGAUUAGUGACUGAGUACAAG 1676

Qy        1146 AAGTCTGAGGAGTTACCGCATCTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATG 1205
                  :|:| |||  : ||    |: || |: | |||| |  : |||||| | ||    |:|
Db        1677 GCCUCUGUGGACAUGCCUGCGCUUGACAUUAGGAAGAAGAUGGAAGAAACGGAAGUGAUG 1736

Qy        1206 TACGACGCGTTATCAGAATTATCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAG 1265
               :|| | ||  : :|||| ::|:|  :  : | ||   |:|| || ::|||: : |
Db        1737 UACAAUGCACUUUCAGAGUUAUCGGUGUUAAGGGAGUCUGACAAAUUCGAUGUUGAUGUU 1796

Qy        1266 TTCAAAGACATGTGCAAGGCTTTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTT 1325
               ::     | |:|:|| |  |::: || |::   ||      ||||||    |: |: |:
Db        1797 UUUUCCCAGAUGUGCCAAUCUUUGGAAGUUGACCCAAUGACGGCAGCGAAGGUUAUAGUC 1856

Qy        1326 GCAGTGGCCGAGAATAGAAGCGGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAAT 1385
               || |:       ||:   |||||: : ||:|: || :::||    || || |||| |||:
Db        1857 GCGGUCAUGAGCAAUGAGAGCGGUCUGACUCUCACAUUUGAACGACCUACUGAGGCGAAU 1916

Qy        1386 GTGGCTAAGGCTCT------TAAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCG 1439
               |: ||    ||: :      : ||   | ||| :| || |  |   :     ::    |
Db        1917 GUUGCGCUAGCUUUACAGGAUCAAGAGAAGGCUUCAGAAGGUGCAUUGGUAGUUACCUCA 1976

Qy        1440 ACATCCGAAGAGGTGAACGTAAATAAATTTTCTATTGCTGAGAAAGGGAGATTGCCTGTG 1499
               | |   |  || |        |  ||   ::| |: ||      || |  |      |
```

```
Db       1977 AGAGAAGUUGAAGAACCGUCCAUGAAGGGUUCGAUGGCCAGAGGAGAGUUACAAUUAGCU 2036

Qy       1500 TGTGCAGAAAGTCATGGTTTGACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTC 1559
               |:   |   |  |:  :  |  |    |  | :   || || ||||| : |||:|  :
Db       2037 GGUCUUGCUGGAGAUCAUCCGGAGUCGUCCUAUUCUAAGAACGAGGAGAUAGAGUCUUUA 2096

Qy       1560 AACGATTTCCATAAGGCTTGCGTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTC 1619
               |  | :: ||:| |||    |  ||:     : |::   ||||| |:|   :|| ::|:
Db       2097 GAGCAGUUUCAUAUGGCGACGGCAGAUUCGUUAAUUCGUAAGCAGAUGAGCUCGAUUGUG 2156

Qy       1620 TACACTGGCTCACTCAAAGTTCAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCG 1679
              :|||| ||   |   : ||||::|| ||||:||| |||: : : || ||  :|| ||| :|
Db       2157 UACACGGGUCCGAUUAAAGUUCAGCAAAUGAAAAACUUUAUCGAUAGCCUGGUAGCAUCA 2216

Qy       1680 TTGTCCGCCACTGTATCAAATCTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCT 1739
               : :| ||  | |: :| ||:|:   ||||  |: || ||:  ||  |   :||   :
Db       2217 CUAUCUGCUGCGGUGUCGAAUCUCGUCAAGAUCCUCAAAGAUACAGCUGCUAUUGACCUU 2276

Qy       1740 GATTCCAGGGAGAAAGTTGGTGTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCT 1799
              ||  || |  | ||  ::|| |: : |||:|:  | :  |  |||:|| :  :||||||
Db       2277 GAAACCCGUCAAAAGUUUGGAGUCUUGGAUGUUGCAUCUAGGAAGUGGUUAAUCAAACCA 2336

Qy       1800 GCGGCCAAAGGTCATTCATGGGGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCA 1859
               |||||||  |:||: ||:|||| |::|:         ||  | ||||      :   ||
Db       2337 ACGGCCAAGAGUCAUGCAUGGGGUGUUGUUGAAACCCACGCGAGGAAGUAUCAUGUGGCG 2396

Qy       1860 CTTCTATCTTATGAAGGAGATAGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTA 1919
              |::  :    :|:|| |   |  |  :||:|||       || :|||| || |: ||:|:
Db       2397 CUUUUGGAAUAUGAUGAGCAGGGUGUGGUGACAUGCGAUGAUUGGAGAAGAGUAGCUGUU 2456

Qy       1920 TCATCTGATACAATGGTATATTCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATG 1979
                 :|:||  |  :  |: :|::| || |: || || |:|  || :|:| | | |     :
Db       2457 AGCUCUGAGUCUGUUGUUUAUUCCGACAUGGCGAAACUCAGAACUCUGCGCAGACUGCUU 2516

Qy       1980 AGAGACGGTGAACCCCACGAACCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGT 2039
               || |||| ||||| || |    :|  |||||| : |: |::|:||| || |: || ||
Db       2517 CGAAACGGAGAACCGCAUGUCAGUAGCGCAAAGGUUGUUCUUGUGGACGGAGUUCCGGGC 2576

Qy       2040 TGTGGAAAGTACAAAGGAGATTTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTT 2099
              :|:|||||    ||||| |   :  ::    ||   :: |: ::||:|| ||: : |: :: |:
Db       2577 UGUGGAAAAACCAAAGAAAUUCUUUCCAGGGUUAAUUUUGAUGAAGAUCUAAUUUUAGUA 2636

Qy       2100 CCTGGAAAACAAGCTGCTGCTATGATCAGAAGAAGGGCTAATTCATCTGGACTGATAAGA 2159
              ||:|| || ||||| || |   |:||:|||||||| | || ||::| :| ||   : |:
Db       2637 CCUGGGAAGCAAGCCGCGGAAAUGAUCAGAAGACGUGCGAAUUCCUCAGGGAUUAUUGUG 2696

Qy       2160 GCCACAATGGACAATGTGAGAACGGTAGATTCACTTCTAATGCAT---------CCAAAA 2210
              ||||| | |||||| |: | ||| |: ||::|  :  :  |:| |:          | |
Db       2697 GCCACGAAGGACAACGUUAAAACCGUUGAUUCUUUCAUGAUGAAUUUUGGGAAAAGCACA 2756

Qy       2211 CCGCGATCACACAAGAGGCTTTTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTT 2270
              |   |       ||||||| : :: |::||:|||||||::||:| :||| || ||::|:|::
Db       2757 CGCUGUCAGUUCAAGAGGUUAUUCAUUGAUGAAGGGUUGAUGUUGCAUACUGGUUGUGUU 2816

Qy       2271 AACTTCCTGGTGCTTATCTCTGGTTGCGACATCGCATACATTTACGGAGATACACAGCAG 2330
              || ::  |:  |:|   |: :|    :|||| |: |||:|   :::||||||| |||||||||
Db       2817 AAUUUUCUUGUGGCGAUGUCAUUGUGCGAAAUUGCAUAUGUUUACGGAGACACACAGCAG 2876

Qy       2331 ATTCCTTTCATTAACAGAGTTCAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAA 2390
              |::|| : ||: || ||||::       ::||||:| |||    ||::::|  ||  :| ||
Db       2877 AUUCCAUACAUCAAUAGAGUUUCAGGAUUCCCGUACCCCGCCCAUUUUGCCAAAUUGGAA 2936

Qy       2391 GTGGATGAAGTTGAGATGAGGAGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTC 2450
              |: || || |: ||||    | || || || |:  | :| ||||  ||:|: |      ::
Db       2937 GUUGACGAGGUGGAGACACGCAGAACUACUCUCCGUUGUCCAGCCGAUGUCACACAUUAU 2996

Qy       2451 CTACAATCGAAGTACGAAGGAGCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCA 2510
              |:  |   ||  :| || ||     |: |  | |||::|  | |:  ||    :| |: :|
Db       2997 CUGAACAGGAGAUAUGAGGGCUUUGUCAUGAGCACUUCUUCGGUUAAAAAGUCUGUUUCG 3056

Qy       2511 TCTGAGATGATAGGCGGTAAGGGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGAAA 2570
                 ||||:| : |||||     |  |:  : ||      : :| |||||  :  | || ||
Db       3057 CAGGAGAUGGUCGGCGGAGCCGCCGUGAUCAAUCCGAUCUCAAAACCCUUGCAUGGCAAG 3116

Qy       2571 ATTGTAACTTTCACTCAGGCTGATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTG 2630
              |:  : ||:::  || ||   | ||:|||   |   :        |  || :|:    |:|:
Db       3117 AUCCUGACUUUUACCCAAUCGGAUAAAGAAGCUCUGCUUUCAAGAGGGUAUUCAGAUGUU 3176

Qy       2631 AACACCGTTCATGAGATCCAAGGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACG 2690
               |||| |: ||:||  : ||||| || ||  :      ||:|: :| |: |: || :: ||
Db       3177 CACACUGUGCAUGAAGUGCAAGGCGAGACAUACUCUGAUGUUUCACUAGUUAGGUUAACC 3236

Qy       2691 GCAACTCCACTGACTCTGATTTCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGA 2750
               | || ||| :  |  : |:: |          ||| ||:|:: : |:|||  :| | ||
Db       3237 CCUACACCAGUCUCCAUCAUUGCAGGAGACAGCCCACAUGUUUUGGUCGCAUUGUCAAGG 3296

Qy       2751 CACACAAAGAGCTTCAAATATTACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGT 2810
              |||||         :||| :| :|||| |: |:  : ||:||:::||:      |: |::||
Db       3297 CACACCUGUUCGCUCAAGUACUACACUGUUGUUAUGGAUCCUUUAGUUAGUAUCAUUAGA 3356

Qy       2811 GATTTGTCTTCTTTAAGCTCCTTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGA 2870
              ||: :         : |||:| : | : ::||| |:|:|:| ||: || ||||| |     |
Db       3357 GAUCUAGAGAAACUUAGCUCGUACUUGUUAGAUAUGUAUAAGGUCGAUGCAGGAACACAA 3416

Qy       2871 TAGCAATTACAGATGGATGCAGTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAA 2930
              :|||||::|||||: ||  | |:|::||||||:    ||:|: :::|: ||| | || ||
Db       3417 UAGCAAUUACAGAUUGACUCGGUGUUCAAAGGUUCCAAUCUUUUUGUUGCAGCGCCAAAG 3476

Qy       2931 TCAGGAGACTTTCCAGATCTACAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACT 2990
               | || ||  :: | ||: : |||:: :| :| ||:    :| |:||| || || || ||
Db       3477 ACUGGUGAUAUUUCUGAUAUGCAGUUUUACUAUGAUAAGUGUCUCCCAGGCAACAGCACC 3536

Qy       2991 ATACTTAACAAGTATGATGCTGTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAG 3050
              |:  : || || : :||:||:|::||||:||||::     :|| | :     : ||:|: ||
Db       3537 AUGAUGAAUAAUUUUGAUGCUGUUACCAUGAGGUUGACUGACAUUUCAUUGAAUGUCAAA 3596

Qy       3051 GATTGTGTTCTTGATTTTTCCAAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTA 3110
              ||::|  :  : ||: : :| ||   : ::|     ||| |||||     |    |   |:|
Db       3597 GAUUGCAUAUUGGAUAUGUCUAAGUCUGUUCGUGCGCCUAAGGAUCAAAUCAAACCACUA 3656

Qy       3111 GAGCCAGTTTTGCGTACCGCGGCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTG 3170
                 ||  :  : || || ||||| |||  |||| |     | ||||:| : |||||: :
Db       3657 AUACCUAUGGUACGAACGGCGGCAGAAAUGCCACGCCAGACUGGACUAUUGGAAAAUUUA 3716

Qy       3171 GTTGCAATGATTAAAAGAAATTTCAACGCACCAGACCTGACGGGGACGATTGACATTGAG 3230
              |: || |:||::||||||| :: |||||||| ||   :| | || |  |::|| |::||
Db       3717 GUGGCGAUGAUUAAAAGAAACUUUAACGCACCCGAGUUGUCUGGCAUCAUUGAUAUUGAA 3776

Qy       3231 AGCACCGCATCTGTTGTAGTAGATAAGTTTTTTGATAGCTATTTTATTAAAAAAGAAAAA 3290
              |  || |||:|: : |: |:|||:|||:::::::||:|| :|:::  ::||| || ||| |
Db       3777 AAUACUGCAUCUUUGGUUGUAGAUAAGUUUUUUGAUAGUUAUUUGCUUAAAGAAAAAAGA 3836

Qy       3291 TACACAAAAAATATTGCTGGAGTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAAC 3350
               |  |||| || | :| :     :| : |   | || :|   : |  |||:||:: |||||
Db       3837 AAACCAAAUAAAAAUGUUUCUUUGUUCAGUAGAGAGUCUCUCAAUAGAUGGUUAGAAAAG 3896

Qy       3351 AGGAAAGAAGTACTATTGGACGACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATC 3410
                | || | |:|  | : | | |  : ||  | :   |::::   ||: :||| ||   :
Db       3897 CAGGAACAGGUAACAAUAGGCCAGCUCGCAGAUUUUGAUUUUGUGGAUUUGCCAGCAGUU 3956

Qy       3411 GATCAGTACAAGCACATGATCAAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAG 3470
              ||:|||:|||  ||||:||: || || ||||| ||||| || ::||||  ::|||: ||
Db       3957 GAUCAGUACAGACACAUGAUUAAAGCACAACCCAAACAAAAGUUGGACACUUCAAUCCAA 4016

Qy       3471 AATGAATACCCTGCTCTGCAAACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTG 3530
              |  || :|||| ||: :||| || |::|: :||||::| ||  |||:||| |  |: ::
Db       4017 ACGGAGUACCCGGCUUUGCAGACGAUUGUGUACCAUUCAAAAAAGAUCAAUGCAAUAUUC 4076

Qy       3531 GCCGGTTTCT---CAGAGCTTACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTT 3587
              | |   :: :     ||||::|| |||     : |: ||    ::||::| |  |  :::
Db       4077 GGCCCGUUGUUUAGUGAGCUUACUAGGCAAUUACUGGACAGUGUUGAUUCGAGCAGAUUU 4136

Qy       3588 CTTTTCTTTACTAGGAAAACTCCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCG 3647
               : :: :: || || || || ||||  ||||:: | || :: ::|    ||:|:||||
Db       4137 UUGUUUUUCACAAGAAAGACACCAGCGCAGAUUGAGGAUUUCUUCGGAGAUCUCGACAGU 4196
```

```
Qy       3648 CACGTTCCTATGGATGTGTTAGAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAG 3707
              || |: || |:|||:|: :: || |:|||:|: :| || :| || || :| ||||| ||
Db       4197 CAUGUGCCGAUGGAUGUCUUGGAGCUGGAUAUAUCAAAAUACGACAAAUCUCAGAAUGAA 4256

Qy       3708 TTTCATTGTGCTGTAGAGTATGAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCC 3767
              ::  || :|:|| |:||| :| || |: :||  ||||::|||: :   | || :: ::||
Db       4257 UUCCACUGUGCAGUAGAAUACGAGAUCUGGCGAAGAUUGGGUUUUGAAGACUUCUUGGGA 4316

Qy       3768 GAAGTGTGGAAACAAGGGCACAGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAG 3827
              ||||: :||||||||||||| || || || ||   : |||||::|.|  || || |: ||
Db       4317 GAAGUUUGGAAACAAGGGCAUAGAAAGACCACCCUCAAGGAUUAUACCGCAGGUAUAAAA 4376

Qy       3828 ACATGTCTGTGGTATCAAAGGAAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTT 3887
              || :|  : :||:|:||||| || ||||| || |: || ||  ::||: || || ||:|:
Db       4377 ACUUGCAUCUGGUAUCAAAGAAAGAGCGGGGACGUCACGACGUUCAUUGGAAACACUGUG 4436

Qy       3888 ATAATAGCAGCTTGCTTGGGTTCAATGTTACCGATGGAAAAGGTCATAAAGGTGCTTTT 3947
              |: |: || || :| ::||  :| |:| : ||||:||| ||  : |: ||||| || :::
Db       4437 AUCAUUGCUGCAUGUUUGGCCUCGAUGCUUCCGAUGGAGAAAAUAAUCAAAGGAGCCUUU 4496

Qy       3948 TGTGGAGACGATTCCGTTTTGTATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCA 4007
              :| || |||||:     :   :|:| :::|||||||||::   || :: || ||   : ||
Db       4497 UGCGGUGACGAUAGUCUGCUGUACUUUCCAAAGGGUUGUGAGUUUCCGGAUGUGCAACAC 4556

Qy       4008 TGTGCTAATCTCATGTGGAATTTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTT 4067
              :   || ||:|: |:|:||||::::|| || ||||:|: :| |||    |:| || :||:::
Db       4557 UCCGCGAAUCUUAUGUGGAAUUUUGAAGCAAAACUGUUUAAAAAACAGUAUGGAUACUUU 4616

Qy       4068 TGTGGTAGATACATCATACACCATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAG 4127
              :| || |||:|   : |:||| || || |  |||    |: |:|:|::| ||:||   : |||
Db       4617 UGCGGAAGAUAUGUAAUACAUCACGACAGAGGAUGCAUUGUGUAUUACGAUCCCCUAAAG 4676

Qy       4128 TTGATCTCCAAACTTGGGGCAAAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGG 4187
              ::||:|:| ||||::|| || ||||| |:|||||||::   || |||:: || |||:: ||
Db       4677 UUGAUCUCGAAACUUGGUGCUAAACACAUCAAGGAUUGGGAACACUUGGAGGAGUUCAGA 4736

Qy       4188 GTGTCTTTGTGCGATGTTGCTTGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTG 4247
                |:|: : :| ||:|::||:  ::|| :    |||   :|        :   | ||| :|
Db       4737 AGGUCUCUUUGUGAUGUUGCUGUUUCGUU---GAACAAUUGUGCGUAUUACACACAGUUG 4793

Qy       4248 AACGCAGCTATCAAGGAGGTTCATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGT 4307
               |||  ||: :    |||||::||:|| |||||    :    ||::||:::| :: :||  |:
Db       4794 GACGACGCUGUAUGGGAGGUUCAUAAGACCGCCCCUCCAGGUUCGUUUGUUUAUAAAAGU 4853

Qy       4308 GTTAACAAATTTTTGTGTGATAAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAG 4367
               :    || : :::|: :||:||| :: : :::|||| :::|::: :| |:|||: :
Db       4854 CUGGUGAAGUAUUUGUCUGAUAAAGUUCUUUUUAGAAGUUUGUUUAUAGAUGGCUCUAGU 4913

Qy       4368 TCTCAGAGATACTGTCAAAATTAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACT 4427
              : : | ||  |  |: || |: |  |||:: |: || |: :| |||  |||  |||:   :
Db       4914 UGUUAAAGGAAAAGUGAAUAUCAAUGAGUUUAUCGACCUGUCAAAAAUGGAGAAGAUCUU 4973

Qy       4428 TCCGGCATTCATGACTAAGGTCAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGC 4487
               ||| |  :  : ||     |: |||||:|::|      :| |  |: || || |: |:||
Db       4974 ACCGUCGAUGUUUACCCCUGUAAAGAGUGUUAUGUGUUCCAAAGUUGAUAAAAUAAUGGU 5033

Qy       4488 TGTTAAGAATGATAGTCTTTCTGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAA 4547
              :  : ||||:||      : :| || |:  |  : |::||||| |::||| :  :: | |
Db       5034 UCAUGAGAAUGAGUCAUUGUCAGAGGUGAACCUUCUUAAAGGAGUUAAGCUUAUUGAUAG 5093

Qy       4548 AGGGTATGTGTGCTTAGCTGATTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTG 4607
               || :| |: :| ::||| | :::||: |:  | || |||:||||  : || || || :|
Db       5094 UGGAUACGUCUGUUUAGCCGGUUUGGUCGUCACGGGCGAGUGGAACUUGCCUGACAAUUG 5153

Qy       4608 CCGTGGTGGTGTCAGTGTTTGTATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAAC 4667
              | | || ||:|: || |: :|: : |: || || || |:| ||||     | || || .||
Db       5154 CAGAGGAGGUGUGAGCGUGUGUCUGGUGGACAAAAGGAUGGAAAGAGCCGACGAGGCCAC 5213

Qy       4668 GCTGGGTGCGTATCACGCCCCTGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAA 4727
               |: ||  | :|  || | | ||:   || || |  :::   :: ||| :  : || ||
Db       5214 UCUCGGAUCUUACUACACAGCAGCUGCAAAGAAAAGAUUUCAGUUCAAGGUCGUUCCCAA 5273

Qy       4728 TTATTCAATAACATCCGAGGATGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAA 4787
              ::|: | |:||| || |||| ||  ||| ||   :||||||: ::||: ||:|: |
Db       5274 UUAUGCUAUAACCACCCAGGACGCGAUGAAAAACGUCUGGCAAGUUUUAGUUAAUAUUAG 5333

Qy       4788 AGGAGTGGCTATGGAAGAAGGATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGT 4847
              |   |:|   |:| || || : |:|:||  : :|: :||||:: |: :|  : :|: :
Db       5334 AAAUGUGAAGAUGUCAGCGGGUUUCUGUCCGCUUUCUCUGGAGUUUGUGUCGGUGUGUAU 5393

Qy       4848 AGTACATAAAAATAATGTAAGAAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGG 4907
                |:  |:| |||:||: :|| |  |||:::||| ||     |::   |  |:|| ||||||
Db       5394 UGUUUAUAGAAAUAAUAUAAAAUUAGGUUUGAGAGAGAAGAUUACAAACGUGAGAGACGG 5453

Qy       4908 CTCGCCAATTGAACTCACTGAAAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGC 4967
                ||| |: ||||: || ||| | |: |::|| |||::| :||| || |: || |:| |
Db       5454 AGGGCCCAUGGAACUUACAGAAGAAGUCGUUGAUGAGUUCAUGGAAGAUGUCCCUAUGUC 5513

Qy       4968 TGTGA 4972
                : |
Db       5514 GAUCA 5518
```

```
RESULT 4
US-09-962-527-2
; Sequence 2, Application US/09962527
; Publication No. US20030049813A1
;   GENERAL INFORMATION:
;        APPLICANT: GARGER, STEPHEN
;                   HOLTZ, R. BARRY
;                   McCULLOCH, MICHAEL
;                   TURPEN, THOMAS
;        TITLE OF INVENTION: A PROCESS FOR ISOLATING AND
;                            PURIFYING VIRUSES SOLUBLE PROTEINS AND PEPTIDES
;                            FROM PLANT SOURCES
;        NUMBER OF SEQUENCES: 5
;        CORRESPONDENCE ADDRESS:
;             ADDRESSEE: Howrey & Simon
;             STREET: 1299 Pennsylvania Avenue N.W.
;             CITY: Washington
;             STATE: DC
;             COUNTRY: USA
;             ZIP: 20004
;        COMPUTER READABLE FORM:
;             MEDIUM TYPE: Diskette
;             COMPUTER: IBM Compatible
;             OPERATING SYSTEM: DOS
;             SOFTWARE: FastSEQ for Windows Version 2.0
;        CURRENT APPLICATION DATA:
;             APPLICATION NUMBER: US/09/962,527
;             FILING DATE: 24-Sep-2001
;             CLASSIFICATION: <Unknown>
;        PRIOR APPLICATION DATA:
;             APPLICATION NUMBER: 09/037,751
;             FILING DATE: 10-march-1998
;        ATTORNEY/AGENT INFORMATION:
;             NAME: Halluin, Albert P
;             REGISTRATION NUMBER: 25,277
;             REFERENCE/DOCKET NUMBER: 00801.0140.999
;        TELECOMMUNICATION INFORMATION:
;             TELEPHONE: 650-463-8109
;             TELEFAX: 650-463-8400
;             TELEX: <Unknown>
;   INFORMATION FOR SEQ ID NO: 2:
;        SEQUENCE CHARACTERISTICS:
;             LENGTH: 6439 base pairs
;             TYPE: nucleic acid
;             STRANDEDNESS: single
;             TOPOLOGY: unknown
;        MOLECULE TYPE: Genomic RNA
;        SEQUENCE DESCRIPTION: SEQ ID NO: 2:
US-09-962-527-2

  Query Match             40.9%;  Score 2034.2;  DB 10;  Length 6439;
  Best Local Similarity   44.4%;  Pred. No. 0;
  Matches 2214;  Conservative  957;  Mismatches 1793;  Indels   21;  Gaps    4;
```

```
Qy     6 AAGGTAATTCCTGAGTTTCAAAGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAA 65
         ||   | : ||  | :: |||| ||| || ::: |||| :| ||||||  :||  | ||
Db   537 AAAACAGUCCCCAACUUCCAAAAGGAAGCAUUUGACAGAUACGCAGAAAUUCCUGAAGAC 596

Qy    66 GTCTGCTGCTCTAAAACTTTTCAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGA 125
         |    |:|    || ||::: |||      |||   || |||    || |    || |||
Db   597 GCUGUCUGUCACAAUACUUUCCAGACAAUGCGACAUCAGCCGAUGCAGCAAUCAGGCAGA 656

Qy   126 AGATACGCTGTTGCTCTGCACAGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCG 185
            :| ||  ::|| |: |||||  : :|:|| |: || |   |:|||:: || || ||
Db   657 GUGUAUGCCAUUGCGCUACACAGCAUAUAUGACAUACCAGCCGAUGAGUUCGGGGCGGCA 716

Qy   186 TTAATATCTAAGAATATACATGTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTA 245
          :  :    || ||: : ||:   :| :|:|| ||:: |   ::  | ||     :  :
Db   717 CUCUUGAGGAAAAAUGUCCAUACGUGCUAUGCCGCUUUCCACUUCUCCGAGAACCUGCUU 776

Qy   246 CTAGACCAGACGGAGGTTACGCTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGAT 305
         |: ||  |  |  | |: |   :  | ||||:   |||   :::     | || || ||
Db   777 CUUGAAGAUUCAUACGUCAAUUUGGACGAAAUCAACGCGUGUUUUUCGCGCGAUGGAGAC 836

Qy   306 GATGTTTCTTTTTTCTTTGCTGATGAAAGTACTTTAAATTATAGTCATAAATACAAAAAT 365
          |  :  | :::::  :::||    || ||:||: : ||::|: |:||:|  :|    ||:
Db   837 AAGUUGACCUUUUCUUUUGCAUCAGAGAGUACUCUUAAUUAUUGUCAUAGUUAUUCUAAU 896

Qy   366 ATCTTGCATTATGTAGTTAAATCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAG 425
         |:  :  | :|:|:    ||| |::||:: || || :|:| :|||   |:::|| : |||
Db   897 AUUCUUAAGUAUGUGUGCAAAACUUACUUCCCGGCCUCUAAUAGAGAGGUUUACAUGAAG 956

Qy   426 GAATTTTTAGTCACTAGGGTTAATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTAT 485
         || :::::||:||| || |::||:|| :||::::|:|| ::: | | | :|||:|| : :
Db   957 GAGUUUUUAGUCACCAGAGUUAAUACCUGGUUUUGUAAGUUUUCUAGAAUAGAUACUUUU 1016

Qy   486 ATTCTGTACAAGAGTGTTAGACAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATG 545
          :: :|:||||  |:|:    ||   | |    ||:||:|| |||:: :|:   || |:|
Db  1017 CUUUUGUACAAAGGUGUGGCCCAUAAAAGUGUAGAUAGUGAGCAGUUUUAUACUGCAAUG 1076

Qy   546 GAAGACGCCTTTGCTTACAAGAAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTT 605
         |||||||| :    ::|||| || ||  : || |:|: |||||| || |||    :| ::
Db  1077 GAAGACGCAUGGCAUUACAAAAAGACUCUUGCAAUGUGCAACAGCGAGAGAAUCCUCCUU 1136

Qy   606 AGAGACACGGCTTCGGTTAACTTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCG 665
            ||  |  | :| |: || :  :||:: || || |:|| ||| |:||: |: |:|||
Db  1137 GAGGAUUCAUCAUCAGUCAAUUACUGGUUUCCCAAAAUGAGGGAUAUGGUCAUCGUACCA 1196

Qy   666 CTGTTTGAGGGTTCTATTACCAGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGT 725
          : :: ||   ::|: :    |  |  ||||| |||  | |  || |:| : |:
Db  1197 UUAUUCGACAUUUCUUUGGAGACUAGUAAGAGGACGCGCAAGGAAGUCUUAGUGUCCAAG 1256

Qy   726 GACTTCGTTTACACAGTGCTTAATCATATCAGAACATATCAAGCCAAAGCGTTAACTTAC 785
         || ::||: :  ||||:||::|| || |:  |||||:| || || |||||  : || :||
Db  1257 GAUUUCGUGUUUACAGUGCUUAACCACAUUCGAACAUACCAGGCGAAAGCUCUUACAUAC 1316

Qy   786 CAGAACGTATTATCTTTCGTGGAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACT 845
            || |: :: :|  : |: || :| |:  ||:|  | |: |: |: || ||:|: ||
Db  1317 GCAAAUGUUUUGUCCCUUGUCGAAUCGAUUCGAUCGAGGGUAAUCAUUAACGGUGUGACA 1376

Qy   846 GCTAGGTCTGAATGGGATGTAGATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTC 905
         || |||:| |||:||||:|: || ||| |  :  : ||| ||::|:| |:||| :: : |
Db  1377 GCGAGGUCCGAAUGGGAUGUGGACAAAUCUUUGUUACAAUCCUUGUCCAUGACGUUUUAC 1436

Qy   906 TTGCAGACTAAGCTGGCTGCGCTTCAAGACGATATAGTAATGGGAAAGTTTCGGTGCTTG 965
          :||| ||:||||: || |  |:  | || ||  :| : |:  | |||::: |   |
Db  1437 CUGCAUACUAAGCUUGCCGUUCUAAAGGAUGACUUACUGAUUAGCAAGUUUAGUCUCGGU 1496

Qy   966 GATAAGACCACTTCTGAACTTATTTGGGATGAGGTGGGCAAATTTTTTGGAAACGTTTTC 1025
            || ||    :   | | : : :||||:||| :          :::|| ||||  ::
Db  1497 UCGAAAACGGUGUGCCAGCAUGUGUGGGAUGAGAUUUCGCUGGCGUUUGGGAACGCAUUU 1556

Qy  1026 CCCACTATCAAAGAGAGATTGGTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTG 1085
         ||| |  : ||||||||| :  :|| |||||||| :: :    |:    |   | ||  :
Db  1557 CCCUCCGUGAAAGAGAGACUCUUGAACAGGAAACUUAUCAGAGUGGCAGGCGACGCAUUA 1616
```

```
Qy  1086 AAGATCAAGATCCCAGATCTGTATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACC 1145
          |||:|| | : || ||:|: :|:|: || :   | ||||| :: |:  |:|| :|||
Db  1617 GAGAUCAGGGUGCCUGAUCUAUAUGUGACCUUCCACGACAGAUUAGUGACUGAGUACAAG 1676

Qy  1146 AAGTCTGAGGAGTTACCGCATCTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATG 1205
            :|:| |||  : ||    |: || |: | |||| |  : |||||| | ||    |:|
Db  1677 GCCUCUGUGGACAUGCCUGCGCUUGACAUUAGGAAGAAGAUGGAAGAAACGGAAGUGAUG 1736

Qy  1206 TACGACGCGTTATCAGAATTATCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAG 1265
         :|| | ||  : :|||| ::|:|  :  : | ||   |:|| || ::|||: :  |
Db  1737 UACAAUGCACUUUCAGAGUUAUCGGUGUUAAGGGAGUCUGACAAAUUCGAUGUUGAUGUU 1796

Qy  1266 TTCAAAGACATGTGCAAGGCTTTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTT 1325
         ::     | |:|:|| |  |::: || |::   ||      ||||||    |: |: |:
Db  1797 UUUUCCCAGAUGUGCCAAUCUUUGGAAGUUGACCCAAUGACGGCAGCGAAGGUUAUAGUC 1856

Qy  1326 GCAGTGGCCGAGAATAGAAGCGGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAAT 1385
         || |:       ||:   |||||: : ||:|: || :::||    || || |||| |||:
Db  1857 GCGGUCAUGAGCAAUGAGAGCGGUCUGACUCUCACAUUUGAACGACCUACUGAGGCGAAU 1916

Qy  1386 GTGGCTAAGGCTCT------TAAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCG 1439
         |: ||    ||: :      : ||   | ||| :| || |  |   :     ::    |
Db  1917 GUUGCGCUAGCUUUACAGGAUCAAGAGAAGGCUUCAGAAGGUGCAUUGGUAGUUACCUCA 1976

Qy  1440 ACATCCGAAGAGGTGAACGTAAATAAATTTTCTATTGCTGAGAAAGGGAGATTGCCTGTG 1499
         | |   |  || |        |  ||   ::| |: ||      || |  |      |
Db  1977 AGAGAAGUUGAAGAACCGUCCAUGAAGGGUUCGAUGGCCAGAGGAGAGUUACAAUUAGCU 2036

Qy  1500 TGTGCAGAAAGTCATGGTTTGACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTC 1559
          |:   |   |  |:  :  |  |    |  | :   || || ||||| : |||:|  :
Db  2037 GGUCUUGCUGGAGAUCAUCCGGAGUCGUCCUAUUCUAAGAACGAGGAGAUAGAGUCUUUA 2096

Qy  1560 AACGATTTCCATAAGGCTTGCGTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTC 1619
          |  | :: ||:| |||    |  ||:    : |::   ||||| |:|   :|| ::|:
Db  2097 GAGCAGUUUCAUAUGGCGACGGCAGAUUCGUUAAUUCGUAAGCAGAUGAGCUCGAUUGUG 2156

Qy  1620 TACACTGGCTCACTCAAAGTTCAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCG 1679
         :|||| ||  |  : ||||::|| ||||:||| |||: : : || ||  :|| ||| :|
Db  2157 UACACGGGUCCGAUUAAAGUUCAGCAAAUGAAAAACUUUAUCGAUAGCCUGGUAGCAUCA 2216

Qy  1680 TTGTCCGCCACTGTATCAAATCTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCT 1739
          : :| ||  | |: :| ||:|:   ||||   |: || ||:  ||  |    :||   :
Db  2217 CUAUCUGCUGCGGUGUCGAAUCUCGUCAAGAUCCUCAAAGAUACAGCUGCUAUUGACCUU 2276

Qy  1740 GATTCCAGGGAGAAAGTTGGTGTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCT 1799
         ||  || |  | ||  ::|| |: : |||:|:  | :  |  |||:|| :  :||||||
Db  2277 GAAACCCGUCAAAAGUUUGGAGUCUUGGAUGUUGCAUCUAGGAAGUGGUUAAUCAAACCA 2336

Qy  1800 GCGGCCAAAGGTCATTCATGGGGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCA 1859
          |||||||  |:||: ||:|||| |::|:        ||  | ||||      :   ||
Db  2337 ACGGCCAAGAGUCAUGCAUGGGGUGUUGUUGAAACCCACGCGAGGAAGUAUCAUGUGGCG 2396

Qy  1860 CTTCTATCTTATGAAGGAGATAGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTA 1919
         |:: :    :|:|| |   |  |  :||:|||       || :|||| || |: ||:|:
Db  2397 CUUUUGGAAUAUGAUGAGCAGGGUGUGGUGACAUGCGAUGAUUGGAGAAGAGUAGCUGUU 2456

Qy  1920 TCATCTGATACAATGGTATATTCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATG 1979
            :|:||  |  : |: :|::| || |: || || |:|  || :|:| | | |    :
Db  2457 AGCUCUGAGUCUGUUGUUUAUUCCGACAUGGCGAAACUCAGAACUCUGCGCAGACUGCUU 2516

Qy  1980 AGAGACGGTGAACCCCACGAACCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGT 2039
          || |||| ||||| || |    :|  |||||| : |: |::|:||| || |: || ||
Db  2517 CGAAACGGAGAACCGCAUGUCAGUAGCGCAAAGGUUGUUCUUGUGGACGGAGUUCCGGGC 2576

Qy  2040 TGTGGAAAGTACAAAGGAGATTTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTT 2099
         :|:|||||   ||||| |  : ::   ||  :: |: ::||:|| ||: : |: :: |:
Db  2577 UGUGGAAAAACCAAAGAAAUUCUUUCCAGGGUUAAUUUUGAUGAAGAUCUAAUUUUAGUA 2636

Qy  2100 CCTGGAAAACAAGCTGCTGCTATGATCAGAAGAAGGGCTAATTCATCTGGACTGATAAGA 2159
         ||:|| || ||||| || |  |:||:||||||| | || ||::| :| ||  : |:
Db  2637 CCUGGGAAGCAAGCCGCGGAAAUGAUCAGAAGACGUGCGAAUUCCUCAGGGAUUAUUGUG 2696

Qy  2160 GCCACAATGGACAATGTGAGAACGGTAGATTCACTTCTAATGCAT---------CCAAAA 2210
```

```
                 ||||| | |||||| |: | ||| |: ||::|  :  : |:| |:               | |
Db          2697 GCCACGAAGGACAACGUUAAAACCGUUGAUUCUUUCAUGAUGAAUUUUGGGAAAAGCACA 2756

Qy          2211 CCGCGATCACACAAGAGGCTTTTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTT 2270
                 |   |      |||||||  : ::  |::||:|||||||::||:|  :|||  ||  ||::|:|::
Db          2757 CGCUGUCAGUUCAAGAGGUUAUUCAUUGAUGAAGGGUUGAUGUUGCAUACUGGUUGUGUU 2816

Qy          2271 AACTTCCTGGTGCTTATCTCTGGTTGCGACATCGCATACATTTACGGAGATACACAGCAG 2330
                 || :: |: |:|   |: :|     :|||| |: |||:|  :::|||||||  |||||||||
Db          2817 AAUUUUCUUGUGGCGAUGUCAUUGUGCGAAAUUGCAUAUGUUUACGGAGACACACAGCAG 2876

Qy          2331 ATTCCTTTCATTAACAGAGTTCAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAA 2390
                 |::|| : ||: || ||||::        ::||||:| |||     ||::::|  ||   :| ||
Db          2877 AUUCCAUACAUCAAUAGAGUUUCAGGAUUCCCGUACCCCGCCCAUUUUGCCAAAUUGGAA 2936

Qy          2391 GTGGATGAAGTTGAGATGAGGAGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTC 2450
                 |: || || |: ||||     | || || || |:   | :| ||||   ||:|: |      ::
Db          2937 GUUGACGAGGUGGAGACACGCAGAACUACUCUCCGUUGUCCAGCCGAUGUCACACAUUAU 2996

Qy          2451 CTACAATCGAAGTACGAAGGAGCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCA 2510
                 |:  |   ||  :| || ||     |:  |  |||::|  | |:  ||    :| |: :|
Db          2997 CUGAACAGGAGAUAUGAGGGCUUUGUCAUGAGCACUUCUUCGGUUAAAAAGUCUGUUUCG 3056

Qy          2511 TCTGAGATGATAGGCGGTAAGGGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGGAAA 2570
                    ||||:| : |||||    |  |:  : ||       : :| |||||  :  | || ||
Db          3057 CAGGAGAUGGUCGGCGGAGCCGCCGUGAUCAAUCCGAUCUCAAAACCCUUGCAUGGCAAG 3116

Qy          2571 ATTGTAACTTTCACTCAGGCTGATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTG 2630
                 |:  : ||::: || ||  | ||:|||   |    :          |  || :|:    |:|:
Db          3117 AUCCUGACUUUUACCCAAUCGGAUAAAGAAGCUCUGCUUUCAAGAGGGUAUUCAGAUGUU 3176

Qy          2631 AACACCGTTCATGAGATCCAAGGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACG 2690
                  |||| |: ||:||  : ||||| || ||  :        ||:|: :| |: |: || :: ||
Db          3177 CACACUGUGCAUGAAGUGCAAGGCGAGACAUACUCUGAUGUUUCACUAGUUAGGUUAACC 3236

Qy          2691 GCAACTCCACTGACTCTGATTTCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGA 2750
                  | || |||  :  |  : |:: |          ||| ||:|:: : |:|||   :| | ||
Db          3237 CCUACACCAGUCUCCAUCAUUGCAGGAGACAGCCCACAUGUUUUGGUCGCAUUGUCAAGG 3296

Qy          2751 CACACAAAGAGCTTCAAATATTACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGT 2810
                 |||||          :||| :| :|||| |: |:  : ||:||:::||:     |: |::||
Db          3297 CACACCUGUUCGCUCAAGUACUACACUGUUGUUAUGGAUCCUUUAGUUAGUAUCAUUAGA 3356

Qy          2811 GATTTGTCTTCTTTAAGCTCCTTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGA 2870
                 ||: :          : |||:| : | : ::||| |:|:|:| ||: || ||||| |     |
Db          3357 GAUCUAGAGAAACUUAGCUCGUACUUGUUAGAUAUGUAUAAGGUCGAUGCAGGAACACAA 3416

Qy          2871 TAGCAATTACAGATGGATGCAGTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAA 2930
                 :|||||::|||||: ||   | |:|::|||||||:     ||:|: :::|: ||| | || ||
Db          3417 UAGCAAUUACAGAUUGACUCGGUGUUCAAAGGUUCCAAUCUUUUUGUUGCAGCGCCAAAG 3476

Qy          2931 TCAGGAGACTTTCCAGATCTACAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACT 2990
                   | || ||  :: | ||: : |||:: :| :| ||:    :| |:||| ||·|| || ||
Db          3477 ACUGGUGAUAUUUCUGAUAUGCAGUUUUACUAUGAUAAGUGUCUCCCAGGCAACAGCACC 3536

Qy          2991 ATACTTAACAAGTATGATGCTGTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAG 3050
                 |:  : || || : :||:||:|::||||:||||::    :|| | :     : ||:|: ||
Db          3537 AUGAUGAAUAAUUUUGAUGCUGUUACCAUGAGGUUGACUGACAUUUCAUUGAAUGUCAAA 3596

Qy          3051 GATTGTGTTCTTGATTTTTCCAAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTA 3110
                 ||::|  :  : ||: : :| ||    : ::|     ||| |||||     |     |.  |:|
Db          3597 GAUUGCAUAUUGGAUAUGUCUAAGUCUGUUCGUGCGCCUAAGGAUCAAAUCAAACCACUA 3656

Qy          3111 GAGCCAGTTTTGCGTACCGCGGCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTG 3170
                    ||  :  : || || ||||| |||   |||| |      | ||||:| : |||||: :
Db          3657 AUACCUAUGGUACGAACGGCGGCAGAAAUGCCACGCCAGACUGGACUAUUGGAAAAUUUA 3716

Qy          3171 GTTGCAATGATTAAAAGAAATTTCAACGCACCAGACCTGACGGGGACGATTGACATTGAG 3230
                 |: || |:||::||||||||  :: |||||||| ||   :| | || |   |::|| |::||
Db          3717 GUGGCGAUGAUUAAAAGAAACUUUAACGCACCCGAGUUGUCUGGCAUCAUUGAUAUUGAA 3776

Qy          3231 AGCACCGCATCTGTTGTAGTAGATAAGTTTTTTGATAGCTATTTTATTAAAAAAGAAAAA 3290
                 |  || |||:|: : |: |:|||:|||::::::||:||  :|:::   ::||| || ||| |
Db          3777 AAUACUGCAUCUUUGGUUGUAGAUAAGUUUUUUGAUAGUUAUUUGCUUAAAGAAAAAAGA 3836

Qy          3291 TACACAAAAAATATTGCTGGAGTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAAC 3350
                  |  |||| || | :| :     :| : |  |  || :|  : |  |||:||:: |||||
Db          3837 AAACCAAAUAAAAAUGUUUCUUUGUUCAGUAGAGAGUCUCUCAAUAGAUGGUUAGAAAAG 3896

Qy          3351 AGGAAAGAAGTACTATTGGACGACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATC 3410
                   | || | |:| | : | | |  : ||  | :   |::::   ||: :||| ||  :
Db          3897 CAGGAACAGGUAACAAUAGGCCAGCUCGCAGAUUUUGAUUUUGUGGAUUUGCCAGCAGUU 3956

Qy          3411 GATCAGTACAAGCACATGATCAAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAG 3470
                 ||:|||:|||   ||||:||: || || ||||| ||||| || ::||||   ::|||: ||
Db          3957 GAUCAGUACAGACACAUGAUUAAAGCACAACCCAAACAAAAGUUGGACACUUCAAUCCAA 4016

Qy          3471 AATGAATACCCTGCTCTGCAAACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTG 3530
                 |  || :|||| ||: :||| || |::|: :||||::| ||   |||:||| |   |: ::
Db          4017 ACGGAGUACCCGGCUUUGCAGACGAUUGUGUACCAUUCAAAAAAGAUCAAUGCAAUAUUC 4076

Qy          3531 GCCGGTTTCT---CAGAGCTTACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTT 3587
                 | |   :: :      ||||::|| |||      : |: ||       ::||::| |   | :::
Db          4077 GGCCCGUUGUUUAGUGAGCUUACUAGGCAAUUACUGGACAGUGUUGAUUCGAGCAGAUUU 4136

Qy          3588 CTTTTCTTTACTAGGAAAACTCCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCG 3647
                  : :: :: || || || || ||||  ||||:: | || :: ::|    ||:|:||||
Db          4137 UUGUUUUUCACAAGAAAGACACCAGCGCAGAUUGAGGAUUUCUUCGGAGAUCUCGACAGU 4196

Qy          3648 CACGTTCCTATGGATGTGTTAGAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAG 3707
                 || |: || |:|||:|: :: || |:|||:|: :| || :| || || :| ||||| ||
Db          4197 CAUGUGCCGAUGGAUGUCUUGGAGCUGGAUAUAUCAAAAUACGACAAAUCUCAGAAUGAA 4256

Qy          3708 TTTCATTGTGCTGTAGAGTATGAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCC 3767
                 :: || :|:|| |:||| :| || |: :||  ||||::|||: :   | || :: ::||
Db          4257 UUCCACUGUGCAGUAGAAUACGAGAUCUGGCGAAGAUUGGGUUUUGAAGACUUCUUGGGA 4316

Qy          3768 GAAGTGTGGAAACAAGGGCACAGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAG 3827
                 ||||: :||||||||||||| || || || ||   : |||||::| |  || || |: ||
Db          4317 GAAGUUUGGAAACAAGGGCAUAGAAAGACCACCCUCAAGGAUUAUACCGCAGGUAUAAAA 4376

Qy          3828 ACATGTCTGTGGTATCAAAGGAAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTT 3887
                 || :|  : :||:|:||||| || ||||| || |: || || ::||: || || ||:|:
Db          4377 ACUUGCAUCUGGUAUCAAAGAAAGAGCGGGGACGUCACGACGUUCAUUGGAAACACUGUG 4436

Qy          3888 ATAATAGCAGCTTGCTTGGGTTCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTT 3947
                 |: |: || || :| ::||  :| |:| : ||||:||| ||   : |: ||||| || :::
Db          4437 AUCAUUGCUGCAUGUUUGGCCUCGAUGCUUCCGAUGGAGAAAAUAAUCAAAGGAGCCUUU 4496

Qy          3948 TGTGGAGACGATTCCGTTTTGTATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCA 4007
                 :| || |||||:    :  :|:| :::||||||||::  || :: || ||  : ||
Db          4497 UGCGGUGACGAUAGUCUGCUGUACUUUCCAAAGGGUUGUGAGUUUCCGGAUGUGCAACAC 4556

Qy          4008 TGTGCTAATCTCATGTGGAATTTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTT 4067
                 :  || ||:|: |:|:||||::::|| || ||||:|: :| |||     |:| || :||:::
Db          4557 UCCGCGAAUCUUAUGUGGAAUUUUGAAGCAAAACUGUUAAAAAACAGUAUGGAUACUUU 4616

Qy          4068 TGTGGTAGATACATCATACACCATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAG 4127
                 :| || |||:|   : |:||| || || |  |||    |: |:|:|::| ||:||  : |||
Db          4617 UGCGGAAGAUAUGUAAUACAUCACGACAGAGGAUGCAUUGUGUAUUACGAUCCCCUAAAG 4676

Qy          4128 TTGATCTCCAAACTTGGGGCAAAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGG 4187
                 ::||:|:| ||||::|| || ||||| |:||||||::  || |||:: || |||:: ||
Db          4677 UUGAUCUCGAAACUUGGUGCUAAACACAUCAAGGAUUGGGAACACUUGGAGGAGUUCAGA 4736

Qy          4188 GTGTCTTTGTGCGATGTTGCTTGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTG 4247
                   |:|: : :| ||:|::||:  ::|| :     |||   :|          :   | ||| :|
Db          4737 AGGUCUCUUUGUGAUGUUGCUGUUUCGUU---GAACAAUUGUGCGUAUUACACACAGUUG 4793

Qy          4248 AACGCAGCTATCAAGGAGGTTCATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGT 4307
                   |||  ||: :   |||||::||:|| |||||      :     ||::||:::| :: :||  |:
Db          4794 GACGACGCUGUAUGGGAGGUUCAUAAGACCGCCCCUCCAGGUUCGUUUGUUUAUAAAAGU 4853

Qy          4308 GTTAACAAATTTTTGTGTGATAAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAG 4367
                 :      || : :::|: :||:|||  :: :  :::||||  :::|::: :| |:|||: :
Db          4854 CUGGUGAAGUAUUUGUCUGAUAAAGUUCUUUUUAGAAGUUUGUUUAUAGAUGGCUCUAGU 4913
```

```
Qy        4368 TCTCAGAGATACTGTCAAAATTAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACT 4427
               : : | ||  |  |: || |: |  |||:: |: || |: :| |||  |||  |||:  :
Db        4914 UGUUAAAGGAAAAGUGAAUAUCAAUGAGUUUAUCGACCUGUCAAAAAUGGAGAAGAUCUU 4973

Qy        4428 TCCGGCATTCATGACTAAGGTCAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGC 4487
                ||| |  :  : ||    |: |||||:|::|     :| |  |: || || |: |:|| 
Db        4974 ACCGUCGAUGUUUACCCCUGUAAAGAGUGUUAUGUGUUCCAAAGUUGAUAAAAUAAUGGU 5033

Qy        4488 TGTTAAGAATGATAGTCTTTCTGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAA 4547
               :  : ||||:||     : :| || |:  |  : |::||||| |::||| :  :: | | 
Db        5034 UCAUGAGAAUGAGUCAUUGUCAGAGGUGAACCUUCUUAAAGGAGUUAAGCUUAUUGAUAG 5093

Qy        4548 AGGGTATGTGTGCTTAGCTGATTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTG 4607
                || :| |: :| ::||| | :::||: |:  | || |||:||||  : || || || :|
Db        5094 UGGAUACGUCUGUUUAGCCGGUUUGGUCGUCACGGGCGAGUGGAACUUGCCUGACAAUUG 5153

Qy        4608 CCGTGGTGGTGTCAGTGTTTGTATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAAC 4667
               | | || ||:|: || |: :|: : |: || || || |:| ||||     | || || ||
Db        5154 CAGAGGAGGUGUGAGCGUGUGUCUGGUGGACAAAAGGAUGGAAAGAGCCGACGAGGCCAC 5213

Qy        4668 GCTGGGTGCGTATCACGCCCCTGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAA 4727
                |: ||  | :|  || |  | ||:   || || |  ::: . :: ||| :  : || ||
Db        5214 UCUCGGAUCUUACUACACAGCAGCUGCAAAGAAAAGAUUUCAGUUCAAGGUCGUUCCCAA 5273

Qy        4728 TTATTCAATAACATCCGAGGATGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAA 4787
               ::|: | |:|||  || ||||| ||   |||  ||   :||||||: ::||: ||:|: | 
Db        5274 UUAUGCUAUAACCACCCAGGACGCGAUGAAAAACGUCUGGCAAGUUUUAGUUAAUAUUAG 5333

Qy        4788 AGGAGTGGCTATGGAAGAAGGATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGT 4847
               |   |:|   |:|  ||  || : |:|:||  : :|: :||||:: |: :|  : :|: :
Db        5334 AAAUGUGAAGAUGUCAGCGGGUUUCUGUCCGCUUUCUCUGGAGUUUGUGUCGGUGUGUAU 5393

Qy        4848 AGTACATAAAAATAATGTAAGAAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGG 4907
                |:  |:| |||:||: :|| |  |||:::||| ||    |::   |  |:|| ||||||
Db        5394 UGUUUAUAGAAAUAAUAUAAAAUUAGGUUUGAGAGAGAAGAUUACAAACGUGAGAGACGG 5453

Qy        4908 CTCGCCAATTGAACTCACTGAAAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGC 4967
                  ||| |: ||||: || ||| | |: |::|| |||::| :||| || |: || |:| |
Db        5454 AGGGCCCAUGGAACUUACAGAAGAAGUCGUUGAUGAGUUCAUGGAAGAUGUCCCUAUGUC 5513

Qy        4968 TGTGA 4972
                 : |
Db        5514 GAUCA 5518


RESULT 5
US-10-828-029-2
; Sequence 2, Application US/10828029
; Publication No. US20040171813A1
;   GENERAL INFORMATION:
;        APPLICANT: GARGER, STEPHEN
;                   HOLTZ, R. BARRY
;                   McCULLOCH, MICHAEL
;                   TURPEN, THOMAS
;        TITLE OF INVENTION: A PROCESS FOR ISOLATING AND
;                            PURIFYING VIRUSES SOLUBLE PROTEINS AND PEPTIDES
;                            FROM PLANT SOURCES
;        NUMBER OF SEQUENCES: 5
;        CORRESPONDENCE ADDRESS:
;             ADDRESSEE: Howrey & Simon
;             STREET: 1299 Pennsylvania Avenue N.W.
;             CITY: Washington
;             STATE: DC
;             COUNTRY: USA
;             ZIP: 20004
;        COMPUTER READABLE FORM:
;             MEDIUM TYPE: Diskette
;             COMPUTER: IBM Compatible
;             OPERATING SYSTEM: DOS
;             SOFTWARE: FastSEQ for Windows Version 2.0
;        CURRENT APPLICATION DATA:
;             APPLICATION NUMBER: US/10/828,029
;             FILING DATE: 20-Apr-2004
;             CLASSIFICATION: <Unknown>
;        PRIOR APPLICATION DATA:
;             APPLICATION NUMBER: US/09/962,527
;             FILING DATE: 24-Sep-2001
;             APPLICATION NUMBER: 09/037,751
;             FILING DATE: 10-march-1998
;        ATTORNEY/AGENT INFORMATION:
;             NAME: Halluin, Albert P
;             REGISTRATION NUMBER: 25,277
;             REFERENCE/DOCKET NUMBER: 00801.0140.999
;        TELECOMMUNICATION INFORMATION:
;             TELEPHONE: 650-463-8109
;             TELEFAX: 650-463-8400
;             TELEX: <Unknown>
;   INFORMATION FOR SEQ ID NO: 2:
;        SEQUENCE CHARACTERISTICS:
;             LENGTH: 6439 base pairs
;             TYPE: nucleic acid
;             STRANDEDNESS: single
;             TOPOLOGY: unknown
;        MOLECULE TYPE: Genomic RNA
;        SEQUENCE DESCRIPTION: SEQ ID NO: 2:
US-10-828-029-2

  Query Match             40.9%;  Score 2034.2;  DB 19;  Length 6439;
  Best Local Similarity   44.4%;  Pred. No. 0;
  Matches 2214;  Conservative  957;  Mismatches 1793;  Indels   21;  Gaps    4;

Qy           6 AAGGTAATTCCTGAGTTTCAAAGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAA 65
               ||   | : ||  | :: |||| ||| || ::: |||| :| ||||||  :||  | || 
Db         537 AAAACAGUCCCCAACUUCCAAAAGGAAGCAUUUGACAGAUACGCAGAAAUUCCUGAAGAC 596

Qy          66 GTCTGCTGCTCTAAAACTTTTCAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGA 125
               |    |:|    || ||::: |||      |||   || |||    || |    || |||
Db         597 GCUGUCUGUCACAAUACUUUCCAGACAAUGCGACAUCAGCCGAUGCAGCAAUCAGGCAGA 656

Qy         126 AGATACGCTGTTGCTCTGCACAGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCG 185
                  :| ||  ::|| |: |||||  : :|:|| |: || |   |:|||:: || || || 
Db         657 GUGUAUGCCAUUGCGCUACACAGCAUAUAUGACAUACCAGCCGAUGAGUUCGGGGCGGCA 716

Qy         186 TTAATATCTAAGAATATACATGTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTA 245
                :  :    || ||: : ||:   :| :|:|| ||:: |   ::  | ||     :  : 
Db         717 CUCUUGAGGAAAAAUGUCCAUACGUGCUAUGCCGCUUUCCACUUCUCCGAGAACCUGCUU 776

Qy         246 CTAGACCAGACGGAGGTTACGCTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGAT 305
               |: ||  |  |  | |: |   :  | ||||:   |||   :::     | || || || 
Db         777 CUUGAAGAUUCAUACGUCAAUUUGGACGAAAUCAACGCGUGUUUUUCGCGCGAUGGAGAC 836

Qy         306 GATGTTTCTTTTTTCTTTGCTGATGAAAGTACTTTAAATTATAGTCATAAATACAAAAAT 365
                |  :  | ::::  :::||    || ||:||: : ||::|: |:||:|  :|    ||:
Db         837 AAGUUGACCUUUUCUUUUGCAUCAGAGAGUACUCUUAAUUAUUGUCAUAGUUAUUCUAAU 896

Qy         366 ATCTTGCATTATGTAGTTAAATCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAG 425
               |:  :  | :|:|:    ||| |::||:: || || :|:| :|||   |:::|| : |||
Db         897 AUUCUUAAGUAUGUGUGCAAAACUUACUUCCCGGCCUCUAAUAGAGAGGUUUACAUGAAG 956

Qy         426 GAATTTTTAGTCACTAGGGTTAATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTAT 485
               || :::::||:||| || |::||:|| :||::::|:|| ::: | | | :|||:|| : :
Db         957 GAGUUUUUAGUCACCAGAGUUAAUACCUGGUUUUGUAAGUUUUCUAGAAUAGAUACUUUU 1016

Qy         486 ATTCTGTACAAGAGTGTTAGACAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATG 545
                :: :|:||||  |:|:    ||   | |    ||:||:|| |||:: :|:   || |:|
Db        1017 CUUUUGUACAAAGGUGUGGCCCAUAAAAGUGUAGAUAGUGAGCAGUUUUAUACUGCAAUG 1076

Qy         546 GAAGACGCCTTTGCTTACAAGAAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTT 605
               |||||||| :    ::|||| || ||  : || |:|: |||||  || |||    :| ::
Db        1077 GAAGACGCAUGGCAUUACAAAAAGACUCUUGCAAUGUGCAACAGCGAGAGAAUCCUCCUU 1136

Qy         606 AGAGACACGGCTTCGGTTAACTTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCG 665
                  ||  |  | :| |: || :  :||:: || || |:|| ||| |:||: |: |:||| 
Db        1137 GAGGAUUCAUCAUCAGUCAAUUACUGGUUUCCCAAAAUGAGGGAUAUGGUCAUCGUACCA 1196
```

```
Qy     666 CTGTTTGAGGGTTCTATTACCAGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGT 725
            : :: ||   ::|: :    |  |  |||| |||  | |  || |:| : |:
Db    1197 UUAUUCGACAUUUCUUUGGAGACUAGUAAGAGGACGCGCAAGGAAGUCUUAGUGUCCAAG 1256

Qy     726 GACTTCGTTTACACAGTGCTTAATCATATCAGAACATATCAAGCCAAAGCGTTAACTTAC 785
           || ::||: :  ||||:||::|| || |:  |||||:| || || |||||  : || :||
Db    1257 GAUUUCGUGUUUACAGUGCUUAACCACAUUCGAACAUACCAGGCGAAAGCUCUUACAUAC 1316

Qy     786 CAGAACGTATTATCTTTCGTGGAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACT 845
              || |: :: :|  : |: || :| |:  ||:|  | |: |: |: || ||:|: ||
Db    1317 GCAAAUGUUUUGUCCCUUGUCGAAUCGAUUCGAUCGAGGGUAAUCAUUAACGGUGUGACA 1376

Qy     846 GCTAGGTCTGAATGGGATGTAGATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTC 905
           || |||:| |||:||||:|: || ||| |  :  : ||| ||::|:| |:||| :: : |
Db    1377 GCGAGGUCCGAAUGGGAUGUGGACAAAUCUUUGUUACAAUCCUUGUCCAUGACGUUUUAC 1436

Qy     906 TTGCAGACTAAGCTGGCTGCGCTTCAAGACGATATAGTAATGGGAAAGTTTCGGTGCTTG 965
            :||| ||:||||: || |  |:  | || ||  :| : |:  | |||::: |   |
Db    1437 CUGCAUACUAAGCUUGCCGUUCUAAAGGAUGACUUACUGAUUAGCAAGUUUAGUCUCGGU 1496

Qy     966 GATAAGACCACTTCTGAACTTATTTGGGATGAGGTGGGCAAATTTTTTGGAAACGTTTTC 1025
              || ||    :   | | : : :||||:||| :          :::|| ||||  ::
Db    1497 UCGAAAACGGUGUGCCAGCAUGUGUGGGAUGAGAUUUCGCUGGCGUUUGGGAACGCAUUU 1556

Qy    1026 CCCACTATCAAAGAGAGATTGGTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTG 1085
           ||| |  : ||||||||| :  :|| ||||||| :: :    |:    |   | ||  :
Db    1557 CCCUCCGUGAAAGAGAGACUCUUGAACAGGAAACUUAUCAGAGUGGCAGGCGACGCAUUA 1616

Qy    1086 AAGATCAAGATCCCAGATCTGTATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACC 1145
            |||:|| | : || ||:|: :|:|: || :   | ||||| :: |:  |:|| :|||
Db    1617 GAGAUCAGGGUGCCUGAUCUAUAUGUGACCUUCCACGACAGAUUAGUGACUGAGUACAAG 1676

Qy    1146 AAGTCTGAGGAGTTACCGCATCTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATG 1205
              :|:| |||  : ||    |: || |: | |||| |  : |||||| | ||    |:|
Db    1677 GCCUCUGUGGACAUGCCUGCGCUUGACAUUAGGAAGAAGAUGGAAGAAACGGAAGUGAUG 1736

Qy    1206 TACGACGCGTTATCAGAATTATCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAG 1265
           :|| | ||  : :|||| ::|:|  :  : | ||   |:|| || ::|||: : |
Db    1737 UACAAUGCACUUUCAGAGUUAUCGGUGUUAAGGGAGUCUGACAAAUUCGAUGUUGAUGUU 1796

Qy    1266 TTCAAAGACATGTGCAAGGCTTTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTT 1325
           ::     | |:|:|| |  |::: || |::   ||      ||||||    |: |: |:
Db    1797 UUUUCCCAGAUGUGCCAAUCUUUGGAAGUUGACCCAAUGACGGCAGCGAAGGUUAUAGUC 1856

Qy    1326 GCAGTGGCCGAGAATAGAAGCGGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAAT 1385
           || |:       ||:   |||||: : ||:|: || :::||    || || |||| |||:
Db    1857 GCGGUCAUGAGCAAUGAGAGCGGUCUGACUCUCACAUUUGAACGACCUACUGAGGCGAAU 1916

Qy    1386 GTGGCTAAGGCTCT------TAAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCG 1439
           |: ||    ||: :      : ||     ||| :| || |  |   :     ::    |
Db    1917 GUUGCGCUAGCUUUACAGGAUCAAGAGAAGGCUUCAGAAGGUGCAUUGGUAGUUACCUCA 1976

Qy    1440 ACATCCGAAGAGGTGAACGTAAATAAATTTTCTATTGCTGAGAAAGGGAGATTGCCTGTG 1499
           | |   |  || |        |  ||   ::| |: ||      || |  |      |
Db    1977 AGAGAAGUUGAAGAACCGUCCAUGAAGGGUUCGAUGGCCAGAGGAGAGUUACAAUUAGCU 2036

Qy    1500 TGTGCAGAAAGTCATGGTTTGACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTC 1559
            |:   |   |  |:  :  |  |    |  | :   || || ||||| : |||:|  :
Db    2037 GGUCUUGCUGGAGAUCAUCCGGAGUCGUCCUAUUCUAAGAACGAGGAGAUAGAGUCUUUA 2096

Qy    1560 AACGATTTCCATAAGGCTTGCGTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTC 1619
            |  | :: ||:| |||    |  ||:     : |::   ||||| |:|   :|| ::|:
Db    2097 GAGCAGUUUCAUAUGGCGACGGCAGAUUCGUUAAUUCGUAAGCAGAUGAGCUCGAUUGUG 2156

Qy    1620 TACACTGGCTCACTCAAAGTTCAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCG 1679
           :|||| ||  |  : ||||::|| ||||:||| |||: : : || ||  :|| ||| :|
Db    2157 UACACGGGUCCGAUUAAAGUUCAGCAAAUGAAAAACUUUAUCGAUAGCCUGGUAGCAUCA 2216

Qy    1680 TTGTCCGCCACTGTATCAAATCTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCT 1739
            : :| ||  | |: :| ||:|:   ||||   |: || ||:  ||  |    :||   :
Db    2217 CUAUCUGCUGCGGUGUCGAAUCUCGUCAAGAUCCUCAAAGAUACAGCUGCUAUUGACCUU 2276

Qy    1740 GATTCCAGGGAGAAAGTTGGTGTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCT 1799
           ||  || |  | ||  ::|| |: : |||:|:  | :  |  |||:|| :  :||||||
Db    2277 GAAACCCGUCAAAAGUUUGGAGUCUUGGAUGUUGCAUCUAGGAAGUGGUUAAUCAAACCA 2336

Qy    1800 GCGGCCAAAGGTCATTCATGGGGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCA 1859
            |||||||  |:||: ||:|||| |::|:        ||  | ||||      :   ||
Db    2337 ACGGCCAAGAGUCAUGCAUGGGGUGUUGUUGAAACCCACGCGAGGAAGUAUCAUGUGGCG 2396

Qy    1860 CTTCTATCTTATGAAGGAGATAGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTA 1919
           |:: :    :|:|| |   |  |  :||:|||       || :|||| || |: ||:|:
Db    2397 CUUUUGGAAUAUGAUGAGCAGGGUGUGGUGACAUGCGAUGAUUGGAGAAGAGUAGCUGUU 2456

Qy    1920 TCATCTGATACAATGGTATATTCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATG 1979
              :|:||  |  : |: :|::| || |: || || |:|  || :|:| | | |    :
Db    2457 AGCUCUGAGUCUGUUGUUUAUUCCGACAUGGCGAAACUCAGAACUCUGCGCAGACUGCUU 2516

Qy    1980 AGAGACGGTGAACCCCACGAACCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGT 2039
            || |||| ||||| || |    :|  |||||| : |: |::|:||| || |: || ||
Db    2517 CGAAACGGAGAACCGCAUGUCAGUAGCGCAAAGGUUGUUCUUGUGGACGGAGUUCCGGGC 2576

Qy    2040 TGTGGAAAGTACAAAGGAGATTTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTT 2099
           :|:|||||   ||||| |  : ::   ||  :: |: ::||:|| ||: : |: :: |:
Db    2577 UGUGGAAAAACCAAAGAAAUUCUUUCCAGGGUUAAUUUUGAUGAAGAUCUAAUUUUAGUA 2636

Qy    2100 CCTGGAAAACAAGCTGCTGCTATGATCAGAAGAAGGGCTAATTCATCTGGACTGATAAGA 2159
           ||:|| || ||||| || |  |:||:||||||| | || ||::| :| ||  : |:
Db    2637 CCUGGGAAGCAAGCCGCGGAAAUGAUCAGAAGACGUGCGAAUUCCUCAGGGAUUAUUGUG 2696

Qy    2160 GCCACAATGGACAATGTGAGAACGGTAGATTCACTTCTAATGCAT---------CCAAAA 2210
           ||||| | ||||||| |: | ||| |: ||::|  :  : |:| |:            | |
Db    2697 GCCACGAAGGACAACGUUAAAACCGUUGAUUCUUUCAUGAUGAAUUUUGGGAAAAGCACA 2756

Qy    2211 CCGCGATCACACAAGAGGCTTTTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTT 2270
           |   |      ||||||| : :: |::||:||||||::||:| :||| || ||::|:|::
Db    2757 CGCUGUCAGUUCAAGAGGUUAUUCAUUGAUGAAGGGUUGAUGUUGCAUACUGGUUGUGUU 2816

Qy    2271 AACTTCCTGGTGCTTATCTCTGGTTGCGACATCGCATACATTTACGGAGATACACAGCAG 2330
           || :: |: |:|   |: :|    :|||| |: |||:|  :::||||||| |||||||||
Db    2817 AAUUUUCUUGUGGCGAUGUCAUUGUGCGAAAUUGCAUAUGUUUACGGAGACACACAGCAG 2876

Qy    2331 ATTCCTTTCATTAACAGAGTTCAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAA 2390
           |::|| : ||: || ||||::       ::||||:| |||   ||::::|  ||  :| ||
Db    2877 AUUCCAUACAUCAAUAGAGUUUCAGGAUUCCCGUACCCCGCCCAUUUUGCCAAAUUGGAA 2936

Qy    2391 GTGGATGAAGTTGAGATGAGGAGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTC 2450
           |: || || |: ||||   | || || || |:  | :| ||||  ||:|: |    ::
Db    2937 GUUGACGAGGUGGAGACACGCAGAACUACUCUCCGUUGUCCAGCCGAUGUCACACAUUAU 2996

Qy    2451 CTACAATCGAAGTACGAAGGAGCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCA 2510
           |:  |   ||  :| || ||    |: |  | |||::|  | |:  ||   :| |: :|
Db    2997 CUGAACAGGAGAUAUGAGGGCUUUGUCAUGAGCACUUCUUCGGUUAAAAAGUCUGUUUCG 3056

Qy    2511 TCTGAGATGATAGGCGGTAAGGGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGGAAA 2570
              ||||:| : |||||    |  |:  : ||     : :| |||||  :  | || ||
Db    3057 CAGGAGAUGGUCGGCGGAGCCGCCGUGAUCAAUCCGAUCUCAAAACCCUUGCAUGGCAAG 3116

Qy    2571 ATTGTAACTTTCACTCAGGCTGATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTG 2630
           |:  : ||::: || ||  | ||:|||   |   :         |  || :|:     |:|:
Db    3117 AUCCUGACUUUUACCCAAUCGGAUAAAGAAGCUCUGCUUUCAAGAGGGUAUUCAGAUGUU 3176

Qy    2631 AACACCGTTCATGAGATCCAAGGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACG 2690
            |||| |: ||:||  : ||||| || || :     ||:|: :| |: |: || :: ||
Db    3177 CACACUGUGCAUGAAGUGCAAGGCGAGACAUACUCUGAUGUUUCACUAGUUAGGUUAACC 3236

Qy    2691 GCAACTCCACTGACTCTGATTTCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGA 2750
            | || ||| :  |  : |:: |         ||| ||:|:: : |:|||  :| | ||
Db    3237 CCUACACCAGUCUCCAUCAUUGCAGGAGACAGCCCACAUGUUUUGGUCGCAUUGUCAAGG 3296

Qy    2751 CACACAAAGAGCTTCAAATATTACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGT 2810
           |||||        :||| :| :|||| |: |:  : ||:||:::||:    |: |::||
Db    3297 CACACCUGUUCGCUCAAGUACUACACUGUUGUUAUGGAUCCUUUAGUUAGUAUCAUUAGA 3356

Qy    2811 GATTTGTCTTCTTTAAGCTCCTTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGA 2870
           ||: :        : |||:| : | : ::||| |:|:|:| ||: || ||||| |    |
```

```
Db   3357 GAUCUAGAGAAACUUAGCUCGUACUUGUUAGAUAUGUAUAAGGUCGAUGCAGGAACACAA 3416

Qy   2871 TAGCAATTACAGATGGATGCAGTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAA 2930
          :|||||::|||||: ||  | |:|::||||||:   ||:|: :::|: ||| | || ||
Db   3417 UAGCAAUUACAGAUUGACUCGGUGUUCAAAGGUUCCAAUCUUUUUGUUGCAGCGCCAAAG 3476

Qy   2931 TCAGGAGACTTTCCAGATCTACAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACT 2990
           | || ||  :: | ||: : |||:: :| :| ||:   :| |:||| || || || ||
Db   3477 ACUGGUGAUAUUUCUGAUAUGCAGUUUUACUAUGAUAAGUGUCUCCCAGGCAACAGCACC 3536

Qy   2991 ATACTTAACAAGTATGATGCTGTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAG 3050
          |:  : || || : :||:||:|::||||:||||::   :|| | :    : ||:|: ||
Db   3537 AUGAUGAAUAAUUUUGAUGCUGUUACCAUGAGGUUGACUGACAUUUCAUUGAAUGUCAAA 3596

Qy   3051 GATTGTGTTCTTGATTTTTCCAAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTA 3110
          ||::|  :  : ||: : :| ||   : ::|    ||| |||||    |    |   |:|
Db   3597 GAUUGCAUAUUGGAUAUGUCUAAGUCUGUUCGUGCGCCUAAGGAUCAAAUCAAACCACUA 3656

Qy   3111 GAGCCAGTTTTGCGTACCGCGGCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTG 3170
             ||   : : || || ||||| |||  |||| |     | ||||:| : |||||: :
Db   3657 AUACCUAUGGUACGAACGGCGGCAGAAAUGCCACGCCAGACUGGACUAUUGGAAAAUUUA 3716

Qy   3171 GTTGCAATGATTAAAAGAAATTTCAACGCACCAGACCTGACGGGGACGATTGACATTGAG 3230
          |: || |:||::|||||||| :: |||||||| ||  :| | || |  |::|| |::||
Db   3717 GUGGCGAUGAUUAAAAGAAACUUUAACGCACCCGAGUUGUCUGGCAUCAUUGAUAUUGAA 3776

Qy   3231 AGCACCGCATCTGTTGTAGTAGATAAGTTTTTTGATAGCTATTTTATTAAAAAAGAAAAA 3290
          |  || |||:|: : |: |:|||:|||:::::::||:|| :|:::  ::||| || ||| |
Db   3777 AAUACUGCAUCUUUGGUUGUAGAUAAGUUUUUUGAUAGUUAUUUGCUUAAAGAAAAAAGA 3836

Qy   3291 TACACAAAAAATATTGCTGGAGTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAAC 3350
           |  |||| || | :| :    :| : |  |  | :    : |  |||:||:: |||||
Db   3837 AAACCAAAUAAAAAUGUUUCUUUGUUCAGUAGAGAGUCUCUCAAUAGAUGGUUAGAAAAG 3896

Qy   3351 AGGAAAGAAGTACTATTGGACGACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATC 3410
            | || | |:|  | :|| | |  : ||  | :   |::::   ||: :||| ||  :
Db   3897 CAGGAACAGGUAACAAUAGGCCAGCUCGCAGAUUUUGAUUUUGUGGAUUUGCCAGCAGUU 3956

Qy   3411 GATCAGTACAAGCACATGATCAAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAG 3470
          ||:|||:|||  ||||:||: || || ||||| ||||| | ::||||  ::|||: ||
Db   3957 GAUCAGUACAGACACAUGAUUAAAGCACAACCCAAACAAAAGUUGGACACUUCAAUCCAA 4016

Qy   3471 AATGAATACCCTGCTCTGCAAACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTG 3530
          |  || :|||| ||: :||| || |::|: :||||::| ||  |||:||| |  |: ::
Db   4017 ACGGAGUACCCGGCUUUGCAGACGAUUGUGUACCAUUCAAAAAAGAUCAAUGCAAUAUUC 4076

Qy   3531 GCCGGTTTCT---CAGAGCTTACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTT 3587
          | |   :: :     ||||::|| ||     : |: ||     ::||::| |  |  :::
Db   4077 GGCCCGUUGUUUAGUGAGCUUACUAGGCAAUUACUGGACAGUGUUGAUUCGAGCAGAUUU 4136

Qy   3588 CTTTTCTTTACTAGGAAAACTCCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCG 3647
           : :: :: || || || || ||||  ||||:: | || :: ::|   ||:|:||||
Db   4137 UUGUUUUUCACAAGAAAGACACCAGCGCAGAUUGAGGAUUUCUUCGGAGAUCUCGACAGU 4196

Qy   3648 CACGTTCCTATGGATGTGTTAGAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAG 3707
          || |: || |:|||:|: :: || |:|||:|: :| || :| || || :| ||||| ||
Db   4197 CAUGUGCCGAUGGAUGUCUUGGAGCUGGAUAUAUCAAAAUACGACAAAUCUCAGAAUGAA 4256

Qy   3708 TTTCATTGTGCTGTAGAGTATGAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCC 3767
          :: || :|:|| |:||| :| || |: :||  ||||::|||: :  | || :: ::||
Db   4257 UUCCACUGUGCAGUAGAAUACGAGAUCUGGCGAAGAUUGGGUUUUGAAGACUUCUUGGGA 4316

Qy   3768 GAAGTGTGGAAACAAGGGCACAGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAG 3827
          ||||: :|||||||||||||| || || || ||  : |||||::| |  || || |: ||
Db   4317 GAAGUUUGGAAACAAGGGCAUAGAAAGACCACCCUCAAGGAUUAUACCGCAGGUAUAAAA 4376

Qy   3828 ACATGTCTGTGGTATCAAAGGAAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTT 3887
          || :|  : :||:|:||||| || ||||| || |: || || ::||: || || ||:|:
Db   4377 ACUUGCAUCUGGUAUCAAAGAAAGAGCGGGGACGUCACGACGUUCAUUGGAAACACUGUG 4436

Qy   3888 ATAATAGCAGCTTGCTTGGGTTCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTT 3947
          |: |: || || :| ::||  :| |:| : ||||:||| ||  : |: ||||| || :::
Db   4437 AUCAUUGCUGCAUGUUUGGCCUCGAUGCUUCCGAUGGAGAAAAUAAUCAAAGGAGCCUUU 4496

Qy   3948 TGTGGAGACGATTCCGTTTTGTATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCA 4007
          :| || |||||:    :  :|:| :::||||||||::  || :: || ||  : ||
Db   4497 UGCGGUGACGAUAGUCUGCUGUACUUUCCAAAGGGUUGUGAGUUUCCGGAUGUGCAACAC 4556

Qy   4008 TGTGCTAATCTCATGTGGAATTTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTT 4067
          :  || ||:|: |:|:||||::::|| || ||||:|: :| |||   |:| || :||:::
Db   4557 UCCGCGAAUCUUAUGUGGAAUUUUGAAGCAAAACUGUUUAAAAAACAGUAUGGAUACUUU 4616

Qy   4068 TGTGGTAGATACATCATACACCATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAG 4127
          :| || |||:|  : |:||| || || |  |||   |: |:|:|::| ||:||  : |||
Db   4617 UGCGGAAGAUAUGUAAUACAUCACGACAGAGGAUGCAUUGUGUAUUACGAUCCCCUAAAG 4676

Qy   4128 TTGATCTCCAAACTTGGGGCAAAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGG 4187
          ::||:|:| ||||::|| || ||||| |:||||||::  || |||:: || |||:: ||
Db   4677 UUGAUCUCGAAACUUGGUGCUAAACACAUCAAGGAUUGGGAACACUUGGAGGAGUUCAGA 4736

Qy   4188 GTGTCTTTGTGCGATGTTGCTTGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTG 4247
            |:|: : :| ||:|::||:  ::|| :    |||   :|       :   | ||| :|
Db   4737 AGGUCUCUUUGUGAUGUUGCUGUUUCGUU---GAACAAUUGUGCGUAUUACACACAGUUG 4793

Qy   4248 AACGCAGCTATCAAGGAGGTTCATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGT 4307
           |||  ||: :   |||||::||:|| |||||   :   ||::||:::| :: :||  |:
Db   4794 GACGACGCUGUAUGGGAGGUUCAUAAGACCGCCCCUCCAGGUUCGUUUGUUUAUAAAAGU 4853

Qy   4308 GTTAACAAATTTTTGTGTGATAAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAG 4367
           :    || : :::|: :||:||| :: : :::|||| :::|::: :| |:|||: :
Db   4854 CUGGUGAAGUAUUUGUCUGAUAAAGUUCUUUUUAGAAGUUUGUUUAUAGAUGGCUCUAGU 4913

Qy   4368 TCTCAGAGATACTGTCAAAATTAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACT 4427
          : : | ||  |  |: || |: |  |||:: |: || |: :| |||  |||  |||:  :
Db   4914 UGUUAAAGGAAAAGUGAAUAUCAAUGAGUUUAUCGACCUGUCAAAAAUGGAGAAGAUCUU 4973

Qy   4428 TCCGGCATTCATGACTAAGGTCAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGC 4487
           ||| |  :  : ||    |: |||||:|::|     :| |  |: || || |: |:||
Db   4974 ACCGUCGAUGUUUACCCCUGUAAAGAGUGUUAUGUGUUCCAAAGUUGAUAAAAUAAUGGU 5033

Qy   4488 TGTTAAGAATGATAGTCTTTCTGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAA 4547
          :  : ||||:||     : :| || |:  |  : |::||||| |::||| :  :: | |
Db   5034 UCAUGAGAAUGAGUCAUUGUCAGAGGUGAACCUUCUUAAAGGAGUUAAGCUUAUUGAUAG 5093

Qy   4548 AGGGTATGTGTGCTTAGCTGATTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTG 4607
           || :| |: :| ::||| | :::||: |:  | || |||:||||  : || || || :|
Db   5094 UGGAUACGUCUGUUUAGCCGGUUUGGUCGUCACGGGCGAGUGGAACUUGCCUGACAAUUG 5153

Qy   4608 CCGTGGTGGTGTCAGTGTTTGTATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAAC 4667
          | | || ||:|: |  |: :|: : |: || || || |:| ||||     | || || ||
Db   5154 CAGAGGAGGUGUGAGCGUGUGUCUGGUGGACAAAAGGAUGGAAAGAGCCGACGAGGCCAC 5213

Qy   4668 GCTGGGTGCGTATCACGCCCCTGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAA 4727
           |: ||  | :|  || |  | ||:   || || |  :::   :: ||| :  : || ||
Db   5214 UCUCGGAUCUUACUACACAGCAGCUGCAAAGAAAAGAUUUCAGUUCAAGGUCGUUCCCAA 5273

Qy   4728 TTATTCAATAACATCCGAGGATGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAA 4787
          ::|: | |:|||  || |||| ||   |||  ||   :||||||: ::||: ||:|: |
Db   5274 UUAUGCUAUAACCACCCAGGACGCGAUGAAAAACGUCUGGCAAGUUUUAGUUAAUAUUAG 5333

Qy   4788 AGGAGTGGCTATGGAAGAAGGATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGT 4847
          |   |:|   |:|  ||  || : |:|:||  : :|: :||||:: |: :|  : :|: :
Db   5334 AAAUGUGAAGAUGUCAGCGGGUUUCUGUCCGCUUUCUCUGGAGUUUGUGUCGGUGUGUAU 5393

Qy   4848 AGTACATAAAAATAATGTAAGAAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGG 4907
           |:  |:| |||:||: :|| |  |||:::||| ||    |::   |  |:|| ||||||
Db   5394 UGUUUAUAGAAAUAAUAUAAAAUUAGGUUUGAGAGAGAAGAUUACAAACGUGAGAGACGG 5453

Qy   4908 CTCGCCAATTGAACTCACTGAAAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGC 4967
             ||| |: ||||: || ||| | |: |::|| |||::| :||| || |: || |:| |
Db   5454 AGGGCCCAUGGAACUUACAGAAGAAGUCGUUGAUGAGUUCAUGGAAGAUGUCCCUAUGUC 5513

Qy   4968 TGTGA 4972
            : |
Db   5514 GAUCA 5518
```

```
RESULT 6
US-10-338-592-2
; Sequence 2, Application US/10338592
; Publication No. US20030208792A1
; GENERAL INFORMATION:
;  APPLICANT: Fitchen, John H.
;  APPLICANT:  Beachy, Roger N.
;  TITLE OF INVENTION: METHOD FOR USING TOBACCO MOSAIC VIRUS TO
;  TITLE OF INVENTION:  OVERPRODUCE PEPTIDES AND PROTEINS
;  FILE REFERENCE: TSRI 312.1C1
;  CURRENT APPLICATION NUMBER: US/10/338,592
;  CURRENT FILING DATE:  2003-01-07
;  PRIOR APPLICATION NUMBER: US 09/401,415
;  PRIOR FILING DATE: 1999-09-21
;  PRIOR APPLICATION NUMBER: US 08/687,559
;  PRIOR FILING DATE: 1996-11-18
;  PRIOR APPLICATION NUMBER: PCT/US95/01467
;  PRIOR FILING DATE: 1995-02-03
;  PRIOR APPLICATION NUMBER: US 08/192,477
;  PRIOR FILING DATE: 1994-02-03
;  NUMBER OF SEQ ID NOS: 32
;  SOFTWARE: FastSEQ for Windows Version 4.0
; SEQ ID NO 2
;   LENGTH: 6395
;   TYPE: DNA
;   ORGANISM: Tobacco mosaic virus
US-10-338-592-2

  Query Match             40.8%;  Score 2031;  DB 17;  Length 6395;
  Best Local Similarity   63.6%;  Pred. No. 0;
  Matches 3169;  Conservative    0;  Mismatches 1795;  Indels   21;  Gaps    4;

Qy          6 AAGGTAATTCCTGAGTTTCAAAGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAA 65
Db        537 AAAACAGTCCCCAACTTCCAAAAGGAAGCATTTGACAGATACGCAGAAATTCCTGAAGAC 596

Qy         66 GTCTGCTGCTCTAAAACTTTTCAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGA 125
Db        597 GCTGTCTGTCACAATACTTTCCAGACAATGCGACATCAGCCGATGCAGCAATCAGGCAGA 656

Qy        126 AGATACGCTGTTGCTCTGCACAGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCG 185
Db        657 GTGTATGCCATTGCGCTACACAGCATATATGACATACCAGCCGATGAGTTCGGGGCGGCA 716

Qy        186 TTAATATCTAAGAATATACATGTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTA 245
Db        717 CTCTTGAGGAAAAATGTCCATACGTGCTATGCCGCTTTCCACTTCTCTGAGAACCTGCTT 776

Qy        246 CTAGACCAGACGGAGGTTACGCTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGAT 305
Db        777 CTTGAAGATTCATACGTCAATTTGGACGAAATCAACGCGTGTTTTTCGCGCGATGGAGAC 836

Qy        306 GATGTTTCTTTTTTCTTTGCTGATGAAAGTACTTTAAATTATAGTCATAAATACAAAAAT 365
Db        837 AAGTTGACCTTTTCTTTTGCATCAGAGAGTACTCTTAATTATTGTCATAGTTATTCTAAT 896

Qy        366 ATCTTGCATTATGTAGTTAAATCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAG 425
Db        897 ATTCTTAAGTATGTGTGCAAAACTTACTTCCCGGCCTCTAATAGAGAGGTTTACATGAAG 956

Qy        426 GAATTTTTAGTCACTAGGGTTAATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTAT 485
Db        957 GAGTTTTTAGTCACCAGAGTTAATACCTGGTTTTGTAAGTTTTCTAGAATAGATACTTTT 1016

Qy        486 ATTCTGTACAAGAGTGTTAGACAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATG 545
Db       1017 CTTTTGTACAAAGGTGTGGCCCATAAAAGTGTAGATAGTGAGCAGTTTTATACTGCAATG 1076

Qy        546 GAAGACGCCTTTGCTTACAAGAAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTT 605
Db       1077 GAAGACGCATGGCATTACAAAAAGACTCTTGCAATGTGCAACAGCGAGAGAATCCTCCTT 1136

Qy        606 AGAGACACGGCTTCGGTTAACTTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCG 665
Db       1137 GAGGATTCATCATCAGTCAATTACTGGTTTCCCAAAATGAGGGATATGGTCATCGTACCA 1196

Qy        666 CTGTTTGAGGGTTCTATTACCAGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGT 725
Db       1197 TTATTCGACATTTCTTTGGAGACTAGTAAGAGGACGCGCAAGGAAGTCTTAGTGTCCAAG 1256

Qy        726 GACTTCGTTTACACAGTGCTTAATCATATCAGAACATATCAAGCCAAAGCGTTAACTTAC 785
Db       1257 GATTTCGTGTTTACAGTGCTTAACCACATTCGAACATACCAGGCGAAAGCTCTTACATAC 1316

Qy        786 CAGAACGTATTATCTTTCGTGGAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACT 845
Db       1317 GCAAATGTTTTGTCCTTTGTCGAATCGATTCGATCGAGGGTAATCATTAACGGTGTGACA 1376

Qy        846 GCTAGGTCTGAATGGGATGTAGATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTC 905
Db       1377 GCGAGGTCCGAATGGGATGTGGACAAATCTTTGTTACAATCCTTGTCCATGACGTTTTAC 1436

Qy        906 TTGCAGACTAAGCTGGCTGCGCTTCAAGACGATATAGTAATGGGAAAGTTTCGGTGCTTG 965
Db       1437 CTGCATACTAAGCTTGCCGTTCTAAAGGATGACTTACTGATTAGCAAGTTTAGTCTCGGT 1496

Qy        966 GATAAGACCACTTCTGAACTTATTTGGGATGAGGTGGGCAAATTTTTTGGAAACGTTTTC 1025
Db       1497 TCGAAAACGGTGTGCCAGCATGTGTGGGATGAGATTTCGCTGGCGTTTGGAACGCATTT 1556

Qy       1026 CCCACTATCAAAGAGAGATTGGTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTG 1085
Db       1557 CCCTCCGTGAAAGAGAGGCTCTTGAACAGGAAACTTATCAGAGTGGCAGGCGACGCATTA 1616

Qy       1086 AAGATCAAGATCCCAGATCTGTATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACC 1145
Db       1617 GAGATCAGGGTGCCTGATCTATATGTGACCTTCCACGACAGATTAGTGACTGAGTACAAG 1676

Qy       1146 AAGTCTGAGGAGTTACCGCATCTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATG 1205
Db       1677 GCCTCTGTGGACATGCCTGCGCTTGACATTAGGAAGAAGATGGAAGAAACGGAAGTGATG 1736

Qy       1206 TACGACGCGTTATCAGAATTATCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAG 1265
Db       1737 TACAATGCACTTTCAGAGTTATCGGTGTTAAGGGAGTCTGACAAATTCGATGTTGATGTT 1796

Qy       1266 TTCAAAGACATGTGCAAGGCTTTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTT 1325
Db       1797 TTTTCCCAGATGTGCCAATCTTTGGAAGTTGACCCAATGACGGCAGCGAAGGTTATAGTC 1856

Qy       1326 GCAGTGGCCGAGAATAGAAGCGGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAAT 1385
Db       1857 GCGGTCATGAGCAATGAGAGCGGTCTGACTCTCACATTTGAACGACCTACTGAGGCGAAT 1916

Qy       1386 GTGGCTAAGGCTCT------TAAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCG 1439
Db       1917 GTTGCGCTAGCTTTACAGGATCAAGAGAAGGCTTCAGAAGGTGCTTTGGTAGTTACCTCA 1976

Qy       1440 ACATCCGAAGAGGTGAACGTAAATAAATTTTCTATTGCTGAGAAAGGGAGATTGCCTGTG 1499
Db       1977 AGAGAAGTTGAAGAACCGTCCATGAAGGGTTCGATGGCCAGAGGAGAGTTACAATTAGCT 2036

Qy       1500 TGTGCAGAAAGTCATGGTTTGACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTC 1559
Db       2037 GGTCTTGCTGGAGATCATCCGGAGTCGTCCTATTCTAAGAACGAGGAGATAGAGTCTTTA 2096

Qy       1560 AACGATTTCCATAAGGCTTGCGTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTC 1619
Db       2097 GAGCAGTTTCATATGGCAACGGCAGATTCGTTAATTCGTAAGCAGATGAGCTCGATTGTG 2156

Qy       1620 TACACTGGCTCACTCAAAGTTCAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCG 1679
Db       2157 TACACGGGTCCGATTAAAGTTCAGCAAATGAAAAACTTTATCGATAGCCTGGTAGCATCA 2216

Qy       1680 TTGTCCGCCACTGTATCAAATCTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCT 1739
```

```
                | || ||  | || || |||||   ||||   || || |||  ||  |    |||   |
Db        2217 CTATCTGCTGCGGTGTCGAATCTCGTCAAGATCCTCAAAGATACAGCTGCTATTGACCTT 2276

Qy        1740 GATTCCAGGGAGAAAGTTGGTGTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCT 1799
               ||  || |  | ||  |||| || | ||||||  | |  |  |||||| |  |||||||
Db        2277 GAAACCCGTCAAAAGTTTGGAGTCTTGGATGTTGCATCTAGGAAGTGGTTAATCAAACCA 2336

Qy        1800 GCGGCCAAAGGTCATTCATGGGGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCA 1859
                |||||||  ||||| ||||||| |||||        ||  | ||||      |   ||
Db        2337 ACGGCCAAGAGTCATGCATGGGGTGTTGTTGAAACCCACGCGAGGAAGTATCATGTGGCG 2396

Qy        1860 CTTCTATCTTATGAAGGAGATAGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTA 1919
               ||| |    ||||| |   |  |  |||||||       || ||||| || || |||||
Db        2397 CTTTTGGAATATGATGAGCAGGGTGTGGTGACATGCGATGATTGGAGAAGAGTAGCTGTC 2456

Qy        1920 TCATCTGATACAATGGTATATTCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATG 1979
                  |||||  |  | || ||||| || || || || |||  || |||| | | |    |
Db        2457 AGCTCTGAGTCTGTTGTTTATTCCGACATGGCGAAACTCAGAACTCTGCGCAGACTGCTT 2516

Qy        1980 AGAGACGGTGAACCCCACGAACCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGT 2039
                || |||| ||||| || |    ||  |||||| | || |||||||| || || || ||
Db        2517 CGAAACGGAGAACCGCATGTCAGTAGCGCAAAGGTTGTTCTTGTGGACGGAGTTCCGGGC 2576

Qy        2040 TGTGGAAAGTACAAAGGAGATTTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTT 2099
               ||||| ||   ||||| |  | ||   ||  || || ||||||| ||| | || || ||
Db        2577 TGTGGGAAAACCAAAGAAATTCTTTCCAGGGTTAATTTTGATGAAGATCTAATTTTAGTA 2636

Qy        2100 CCTGGAAAACAAGCTGCTGCTATGATCAGAAGAAGGGCTAATTCATCTGGACTGATAAGA 2159
               ||||| || ||||| || |  |||||||||||| | || ||||| || ||  | ||
Db        2637 CCTGGGAAGCAAGCCGCGGAAATGATCAGAAGACGTGCGAATTCCTCAGGGATTATTGTG 2696

Qy        2160 GCCACAATGGACAATGTGAGAACGGTAGATTCACTTCTAATGCAT---------CCAAAA 2210
               ||||| | |||||| || | ||| || |||||  |  | ||| ||            | |
Db        2697 GCCACGAAGGACAACGTTAAAACCGTTGATTCTTTCATGATGAATTTTGGGAAAAGCACA 2756

Qy        2211 CCGCGATCACACAAGAGGCTTTTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTT 2270
               |   |      ||||||| | || |||||||||||||||||| |||| || |||||||||
Db        2757 CGCTGTCAGTTCAAGAGGTTATTCATTGATGAAGGGTTGATGTTGCATACTGGTTGTGTT 2816

Qy        2271 AACTTCCTGGTGCTTATCTCTGGTTGCGACATCGCATACATTTACGGAGATACACAGCAG 2330
               || || || |||   || ||    ||||| || |||||  |||||||||| |||||||||
Db        2817 AATTTTCTTGTGGCGATGTCATTGTGCGAAATTGCATATGTTTACGGAGACACACAGCAG 2876

Qy        2331 ATTCCTTTCATTAACAGAGTTCAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAA 2390
               ||||| | ||| || ||||||      |||||||| |||   |||||||  ||  || ||
Db        2877 ATTCCATACATCAATAGAGTTTCAGGATTCCCGTACCCCGCCCATTTTGCCAAATTGGAA 2936

Qy        2391 GTGGATGAAGTTGAGATGAGGAGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTC 2450
               || || || || ||||   | || || || ||  | || ||||  ||||| |    ||
Db        2937 GTTGACGAGGTGGAGACACGCAGAACTACTCTCCGTTGTCCAGCCGATGTCACACATTAT 2996

Qy        2451 CTACAATCGAAGTACGAAGGAGCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCA 2510
               ||  |   ||  || ||    || |  | ||||||  | ||  ||   || || ||
Db        2997 CTGAACAGGAGATATGAGGGCTTTGTCATGAGCACTTCTTCGGTTAAAAAGTCTGTTTCG 3056

Qy        2511 TCTGAGATGATAGGCGGTAAGGGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGGAAA 2570
                  |||||| | |||||    |  ||  | ||     | || |||||  |  | || ||
Db        3057 CAGGAGATGGTCGGCGGAGCCGCCGTGATCAATCCGATCTCAAAACCCTTGCATGGCAAG 3116

Qy        2571 ATTGTAACTTTCACTCAGGCTGATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTG 2630
               ||  | ||||| || ||  | ||||||   |   |       |  || |||    ||||
Db        3117 ATCCTGACTTTTACCCAATCGGATAAAGAAGCTCTGCTTTCAAGAGGGTATTCAGATGTT 3176

Qy        2631 AACACCGTTCATGAGATCCAAGGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACG 2690
                |||| || |||||  | ||||| || || |     ||||| || || || || || ||
Db        3177 CACACTGTGCATGAAGTGCAAGGCGAGACATACTCTGATGTTTCACTAGTTAGGTTAACC 3236

Qy        2691 GCAACTCCACTGACTCTGATTTCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGA 2750
                | || ||| |  |  | ||| |         ||| |||||| | |||||  || | ||
Db        3237 CCTACACCAGTCTCCATCATTGCAGGAGACAGCCCACATGTTTTGGTCGCATTGTCAAGG 3296

Qy        2751 CACACAAAGAGCTTCAAATATTACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGT 2810
               |||||        |||| || ||||| || ||  | |||||||||||    || |||||
Db        3297 CACACCTGTTCGCTCAAGTACTACACTGTTGTTATGGATCCTTTAGTTAGTATCATTAGA 3356

Qy        2811 GATTTGTCTTCTTTAAGCTCCTTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGA 2870
               ||| |        | ||||| | | | ||||| ||||||| ||| || ||||| |    |
Db        3357 GATCTAGAGAAACTTAGCTCGTACTTGTTAGATATGTATAAGGTCGATGCAGGAACACAA 3416

Qy        2871 TAGCAATTACAGATGGATGCAGTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAA 2930
               |||||||||||||| ||  | ||||||||||||   ||||| ||||| ||| | || ||
Db        3417 TAGCAATTACAGATTGACTCGGTGTTCAAAGGTTCCAATCTTTTTGTTGCAGCGCCAAAG 3476

Qy        2931 TCAGGAGACTTTCCAGATCTACAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACT 2990
                | || ||  || | ||| | ||||| || || |||   || ||||| || || || ||
Db        3477 ACTGGTGATATTTCTGATATGCAGTTTTACTATGATAAGTGTCTCCCAGGCAACAGCACC 3536

Qy        2991 ATACTTAACAAGTATGATGCTGTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAG 3050
               ||  | || || | |||||||||||||||||||||   ||| | |    | ||||| ||
Db        3537 ATGATGAATAATTTTGATGCTGTTACCATGAGGTTGACTGACATTTCATTGAATGTCAAA 3596

Qy        3051 GATTGTGTTCTTGATTTTTCCAAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTA 3110
               |||||  |  | ||| | || ||   | || |   ||| |||||    |    |   |||
Db        3597 GATTGCATATTGGATATGTCTAAGTCTGTTGCTGCGCCTAAGGATCAAATCAAACCACTA 3656

Qy        3111 GAGCCAGTTTTGCGTACCGCGGCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTG 3170
                  ||  |  | || || ||||| |||  |||| |     | |||||| | |||||| |
Db        3657 ATACCTATGGTACGAACGGCGGCAGAAATGCCACGCCAGACTGGACTATTGGAAAATTTA 3716

Qy        3171 GTTGCAATGATTAAAAGAAATTTCAACGCACCAGACCTGACGGGGACGATTGACATTGAG 3230
               || || ||||||||||| || || |||||||| ||  || | || |  ||||| |||||
Db        3717 GTGGCGATGATTAAAAGGAACTTTAACGCACCCGAGTTGTCTGGCATCATTGATATTGAA 3776

Qy        3231 AGCACCGCATCTGTTGTAGTAGATAAGTTTTTTGATAGCTATTTTATTAAAAAAGAAAAA 3290
               |  || |||||| | || |||||||||||||||||||| |||||  ||||| || ||| |
Db        3777 AATACTGCATCTTTAGTTGTAGATAAGTTTTTTGATAGTTATTTGCTTAAAGAAAAAAGA 3836

Qy        3291 TACACAAAAAATATTGCTGGAGTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAAC 3350
                |  |||| ||   || |    || | |  |  || ||  | |  |||||||| |||||
Db        3837 AAACCAAATAAAAATGTTTCTTTGTTCAGTAGAGAGTCTCTCAATAGATGGTTAGAAAAG 3896

Qy        3351 AGGAAAGAAGTACTATTGGACGACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATC 3410
                 | || | |||  | | | | |  | ||  | |   |||||  |||| |||| ||  |
Db        3897 CAGGAACAGGTAACAATAGGCCAGCTCGCAGATTTTGATTTTGTAGATTTGCCAGCAGTT 3956

Qy        3411 GATCAGTACAAGCACATGATCAAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAG 3470
               ||||||||||  |||||||| || || ||||| || || |||||||||  |||||| ||
Db        3957 GATCAGTACAGACACATGATTAAAGCACAACCCAAGCAAAAATTGGACACTTCAATCCAA 4016

Qy        3471 AATGAATACCCTGCTCTGCAAACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTG 3530
               |  || ||||| ||| |||| || ||||| |||||||| ||  ||||||| |  || ||
Db        4017 ACGGAGTACCCGGCTTTGCAGACGATTGTGTACCATTCAAAAAAGATCAATGCAATATTT 4076

Qy        3531 GCCGGTTTCT---CAGAGCTTACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTT 3587
               | |   || |     |||||||| |||    | || ||     ||||||| |  |  |||
Db        4077 GGCCCGTTGTTTAGTGAGCTTACTAGGCAATTACTGGACAGTGTTGATTCGAGCAGATTT 4136

Qy        3588 CTTTTCTTTACTAGGAAAACTCCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCG 3647
                | || || || || || ||||  |||||| | || || |||   |||||||||
Db        4137 TTGTTTTTCACAAGAAAGACACCAGCGCAGATTGAGGATTTCTTCGGAGATCTCGACAGT 4196

Qy        3648 CACGTTCCTATGGATGTGTTAGAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAG 3707
               || || || |||||||| || || |||||||| || || || || || || ||||| ||
Db        4197 CATGTGCCGATGGATGTCTTGGAGCTGGATATATCAAAATACGACAAATCTCAGAATGAA 4256

Qy        3708 TTTCATTGTGCTGTAGAGTATGAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCC 3767
               || || ||||| ||||| || || || |||  |||||||||| |  | || || ||||
Db        4257 TTCCACTGTGCAGTAGAATACGAGATCTGGCGAAGATTGGGTTTTGAAGACTTCTTGGGA 4316

Qy        3768 GAAGTGTGGAAACAAGGGCACAGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAG 3827
               ||||| |||||||||||||| || || || ||  | |||||||| |  || || || ||
Db        4317 GAAGTTTGGAAACAAGGGCATAGAAAGACCACCCTCAAGGATTATACCGCAGGTATAAAA 4376

Qy        3828 ACATGTCTGTGGTATCAAAGGAAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTT 3887
               || ||  | ||||||||||| || ||||| || || || || ||||| || || |||||
Db        4377 ACTTGCATCTGGTATCAAAGAAAGAGCGGGGACGTCACGACGTTCATTGGAAACACTGTG 4436
```

```
Qy       3888 ATAATAGCAGCTTGCTTGGGTTCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTT 3947
              || || || || || ||||  || ||| | |||||||| ||  | || ||||| || |||
Db       4437 ATCATTGCTGCATGTTTGGCCTCGATGCTTCCGATGGAGAAAATAATCAAAGGAGCCTTT 4496

Qy       3948 TGTGGAGACGATTCCGTTTTGTATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCA 4007
              || || ||||||    |  |||| |||||||||||||  || || || ||  | ||
Db       4497 TGCGGTGACGATAGTCTGCTGTACTTTCCAAAGGGTTGTGAGTTTCCGGATGTGCAACAC 4556

Qy       4008 TGTGCTAATCTCATGTGGAATTTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTT 4067
              |  || ||||| |||||||||||||| || ||||||| || |||   ||| || ||||||
Db       4557 TCCGCGAATCTTATGTGGAATTTTGAAGCAAAACTGTTTAAAAAACAGTATGGATACTTT 4616

Qy       4068 TGTGGTAGATACATCATACACCATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAG 4127
              || || |||||  | ||||| || || |  |||   || |||||||| |||||  | |||
Db       4617 TGCGGAAGATATGTAATACATCACGACAGAGGATGCATTGTGTATTACGATCCCCTAAAG 4676

Qy       4128 TTGATCTCCAAACTTGGGGCAAAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGG 4187
              |||||||| |||||||| || ||||| ||||||||||  || ||||| || ||||| ||
Db       4677 TTGATCTCGAAACTTGGTGCTAAACACATCAAGGATTGGGAACACTTGGAGGAGTTCAGA 4736

Qy       4188 GTGTCTTTGTGCGATGTTGCTTGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTG 4247
                |||| | || |||||||||  |||| |    |||   ||       |   | ||| ||
Db       4737 AGGTCTCTTTGTGATGTTGCTGTTTCGTT---GAACAATTGTGCGTATTACACACAGTTG 4793

Qy       4248 AACGCAGCTATCAAGGAGGTTCATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGT 4307
               |||  ||| |   |||||||||||| |||||   |   |||||||||| || |||  ||
Db       4794 GACGACGCTGTATGGGAGGTTCATAAGACCGCCCCTCCAGGTTCGTTTGTTTATAAAAGT 4853

Qy       4308 GTTAACAAATTTTTGTGTGATAAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAG 4367
               |    || | ||||| ||||||| || | ||||||| ||||||| || |||||| |
Db       4854 CTGGTGAAGTATTTGTCTGATAAAGTTCTTTTTAGAAGTTTGTTTATAGATGGCTCTAGT 4913

Qy       4368 TCTCAGAGATACTGTCAAAATTAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACT 4427
              | | | ||  |  || || || |  ||||| || || ||  | |||  |||  ||||  |
Db       4914 TGTTAAAGGAAAAGTGAATATCAATGAGTTTATCGACCTGACAAAAATGGAGAAGATCTT 4973

Qy       4428 TCCGGCATTCATGACTAAGGTCAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGC 4487
               ||| |  |  | ||    || ||||||||||     || |  || || || || ||||
Db       4974 ACCGTCGATGTTTACCCCTGTAAAGAGTGTTATGTGTTCCAAAGTTGATAAAATAATGGT 5033

Qy       4488 TGTTAAGAATGATAGTCTTTCTGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAA 4547
              |  | |||||||     | || || ||  |  | |||||||| |||||| ||  | | |
Db       5034 TCATGAGAATGAGTCATTGTCAGAGGTGAACCTTCTTAAAGGAGTTAAGCTTATTGATAG 5093

Qy       4548 AGGGTATGTGTGCTTAGCTGATTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTG 4607
               || || || || ||||| | |||||| ||  | || ||||||||  | || || || ||
Db       5094 TGGATACGTCTGTTTAGCCGGTTTGGTCGTCACGGGCGAGTGGAACTTGCCTGACAATTG 5153

Qy       4608 CCGTGGTGGTGTCAGTGTTTGTATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAAC 4667
              | | || ||||| || || ||| | || || || || ||| ||||     | || || ||
Db       5154 CAGAGGAGGTGTGAGCGTGTGTCTGGTGGACAAAAGGATGGAAAGAGCCGACGAGGCCAC 5213

Qy       4668 GCTGGGTGCGTATCACGCCCCTGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAA 4727
               || ||  | ||  || |  | |||   || || |  |||   || ||| |  | || ||
Db       5214 TCTCGGATCTTACTACACAGCAGCTGCAAAGAAAAGATTTCAGTTCAAGGTCGTTCCCAA 5273

Qy       4728 TTATTCAATAACATCCGAGGATGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAA 4787
              |||| | |||||  || |||| ||   |||  ||   |||||||| ||||| ||||| |
Db       5274 TTATGCTATAACCACCCAGGACGCGATGAAAAACGTCTGGCAAGTTTTAGTTAATATTAG 5333

Qy       4788 AGGAGTGGCTATGGAAGAAGGATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGT 4847
              |   |||   |||  ||  || | ||||||  | ||| ||||||| || ||  | ||| |
Db       5334 AAATGTGAAGATGTCAGCGGGTTTCTGTCCGCTTTCTCTGGAGTTTGTGTCGGTGTGTAT 5393

Qy       4848 AGTACATAAAAATAATGTAAGAAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGG 4907
               ||  ||| ||||||| ||| |  ||||||||| ||    |||   |  |||| ||||||
Db       5394 TGTTTATAGAAATAATATAAAATTAGGTTTGAGAGAGAAGATTACAAACGTGAGAGACGG 5453

Qy       4908 CTCGCCAATTGAACTCACTGAAAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGC 4967
                 ||| || ||||| || ||| | || ||||| |||||| |||| || || || ||| |
Db       5454 AGGGCCCATGGAACTTACAGAAGAAGTCGTTGATGAGTTCATGGAAGATGTCCCTATGTC 5513
```

```
Qy       4968 TGTGA 4972
                | |
Db       5514 GATCA 5518

RESULT 7
US-09-962-527-3
; Sequence 3, Application US/09962527
; Publication No. US20030049813A1
;  GENERAL INFORMATION:
;       APPLICANT: GARGER, STEPHEN
;                  HOLTZ, R. BARRY
;                  McCULLOCH, MICHAEL
;                  TURPEN, THOMAS
;       TITLE OF INVENTION: A PROCESS FOR ISOLATING AND
;                           PURIFYING VIRUSES SOLUBLE PROTEINS AND PEPTIDES
;                           FROM PLANT SOURCES
;       NUMBER OF SEQUENCES: 5
;       CORRESPONDENCE ADDRESS:
;            ADDRESSEE: Howrey & Simon
;            STREET: 1299 Pennsylvania Avenue N.W.
;            CITY: Washington
;            STATE: DC
;            COUNTRY: USA
;            ZIP: 20004
;       COMPUTER READABLE FORM:
;            MEDIUM TYPE: Diskette
;            COMPUTER: IBM Compatible
;            OPERATING SYSTEM: DOS
;            SOFTWARE: FastSEQ for Windows Version 2.0
;       CURRENT APPLICATION DATA:
;            APPLICATION NUMBER: US/09/962,527
;            FILING DATE: 24-Sep-2001
;            CLASSIFICATION: <Unknown>
;       PRIOR APPLICATION DATA:
;            APPLICATION NUMBER: 09/037,751
;            FILING DATE: 10-march-1998
;       ATTORNEY/AGENT INFORMATION:
;            NAME: Halluin, Albert P
;            REGISTRATION NUMBER: 25,277
;            REFERENCE/DOCKET NUMBER: 00801.0140.999
;       TELECOMMUNICATION INFORMATION:
;            TELEPHONE: 650-463-8109
;            TELEFAX: 650-463-8400
;            TELEX: <Unknown>
;  INFORMATION FOR SEQ ID NO: 3:
;       SEQUENCE CHARACTERISTICS:
;            LENGTH: 6425 base pairs
;            TYPE: nucleic acid
;            STRANDEDNESS: single
;            TOPOLOGY: unknown
;       MOLECULE TYPE: Genomic RNA
;       SEQUENCE DESCRIPTION: SEQ ID NO: 3:
US-09-962-527-3

  Query Match             40.8%;  Score 2031;  DB 10;  Length 6425;
  Best Local Similarity   44.4%;  Pred. No. 0;
  Matches 2212;  Conservative  957;  Mismatches 1795;  Indels   21;  Gaps    4;

Qy          6 AAGGTAATTCCTGAGTTTCAAAGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAA 65
              ||   | : ||  | :: |||| ||| || ::: |||| :| ||||||  :||  | ||
Db        537 AAAACAGUCCCCAACUUCCAAAAGGAAGCAUUUGACAGAUACGCAGAAAUUCCUGAAGAC 596

Qy         66 GTCTGCTGCTCTAAAACTTTTCAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGA 125
              |    |:|    || ||::: |||      |||   || |||    || |    || |||
Db        597 GCUGUCUGUCACAAUACUUUCCAGACAAUGCGACAUCAGCCGAUGCAGCAAUCAGGCAGA 656

Qy        126 AGATACGCTGTTGCTCTGCACAGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCG 185
                 :| ||  ::|| |: |||||  : :|:|| |: || |   |:|||:: || || ||
Db        657 GUGUAUGCCAUUGCGCUACACAGCAUAUAUGACAUACCAGCCGAUGAGUUCGGGGCGGCA 716

Qy        186 TTAATATCTAAGAATATACATGTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTA 245
               :  :    || ||: : ||:   :| :|:|| ||:: |   ::  | ||     :  :
```

```
Db         717 CUCUUGAGGAAAAAUGUCCAUACGUGCUAUGCCGCUUUCCACUUCUCUGAGAACCUGCUU 776

Qy         246 CTAGACCAGACGGAGGTTACGCTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGAT 305
               |: ||  |  |  | |: |   :  | ||||:   |||   :::     | || || ||
Db         777 CUUGAAGAUUCAUACGUCAAUUUGGACGAAAUCAACGCGUGUUUUUCGCGCGAUGGAGAC 836

Qy         306 GATGTTTCTTTTTCTTTGCTGATGAAAGTACTTTAAATTATAGTCATAAATACAAAAAT 365
                |  :  | ::::  :::||    || ||:||: : ||::|: |:||:|  :|    ||:
Db         837 AAGUUGACCUUUUCUUUUGCAUCAGAGAGUACUCUUAAUUAUUGUCAUAGUUAUUCUAAU 896

Qy         366 ATCTTGCATTATGTAGTTAAATCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAG 425
               |:  :  | :|:|:    ||| |::||:: || || :|:| :|||   |:::|| : |||
Db         897 AUUCUUAAGUAUGUGUGCAAAACUUACUUCCCGGCCUCUAAUAGAGAGGUUUACAUGAAG 956

Qy         426 GAATTTTTAGTCACTAGGGTTAATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTAT 485
               || :::::||:||| || |::||:|| :||::::|:|| ::: | | | :|||:|| : :
Db         957 GAGUUUUUAGUCACCAGAGUUAAUACCUGGUUUUGUAAGUUUUCUAGAAUAGAUACUUUU 1016

Qy         486 ATTCTGTACAAGAGTGTTAGACAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATG 545
                :: :|:||||  |:|:    ||   | |    ||:||:|| |||:: :|:   || |:|
Db        1017 CUUUUGUACAAAGGUGUGGCCCAUAAAAGUGUAGAUAGUGAGCAGUUUUAUACUGCAAUG 1076

Qy         546 GAAGACGCCTTTGCTTACAAGAAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTT 605
               |||||||| :    ::|||| || ||  : || |:|: |||||  || |||    :| ::
Db        1077 GAAGACGCAUGGCAUUACAAAAAGACUCUUGCAAUGUGCAACAGCGAGAGAAUCCUCCUU 1136

Qy         606 AGAGACACGGCTTCGGTTAACTTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCG 665
                  ||  |  | :| |: || :  :||:: || || |:|| ||| |:||: |: |:|||
Db        1137 GAGGAUUCAUCAUCAGUCAAUUACUGGUUUCCCAAAAUGAGGGAUAUGGUCAUCGUACCA 1196

Qy         666 CTGTTTGAGGGTTCTATTACCAGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGT 725
                : :: ||    ::|::    |  |  |||| |||  | |  |||:|  : |:
Db        1197 UUAUUCGACAUUUCUUUGGAGACUAGUAAGAGGACGCGCAAGGAAGUCUUAGUGUCCAAG 1256

Qy         726 GACTTCGTTTACACAGTGCTTAATCATATCAGAACATATCAAGCCAAAGCGTTAACTTAC 785
               || ::||: :  ||||:||::|| || |:  |||||:| || || |||||  : || :||
Db        1257 GAUUUCGUGUUUACAGUGCUUAACCACAUUCGAACAUACCAGGCGAAAGCUCUUACAUAC 1316

Qy         786 CAGAACGTATTATCTTTCGTGGAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACT 845
                  || |: :: :| :: |: || :| |:  ||:|  | |: |: |: || ||:|: ||
Db        1317 GCAAAUGUUUUGUCCUUUGUCGAAUCGAUUCGAUCGAGGGUAAUCAUUAACGGUGUGACA 1376

Qy         846 GCTAGGTCTGAATGGGATGTAGATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTC 905
               || |||:| ||||:||||:|: || ||| |  :  : ||| ||::|:| |:||| :: : |
Db        1377 GCGAGGUCCGAAUGGGAUGUGGACAAAUCUUUGUUACAAUCCUUGUCCAUGACGUUUUAC 1436

Qy         906 TTGCAGACTAAGCTGGCTGCGCTTCAAGACGATATAGTAATGGAAAGTTTCGGTGCTTG 965
                :||| ||:||||: || |  |:  | || ||  :| : |:  | |||::: |   |
Db        1437 CUGCAUACUAAGCUUGCCGUUCUAAAGGAUGACUUACUGAUUAGCAAGUUUAGUCUCGGU 1496

Qy         966 GATAAGACCACTTCTGAACTTATTTGGGATGAGGTGGGCAAATTTTTTGGAAACGTTTTC 1025
                  || ||    :   | | : : :||||:||| :          :::|| ||||  ::
Db        1497 UCGAAAACGGUGUGCCAGCAUGUGUGGGAUGAGAUUUCGCUGGCGUUUGGGAACGCAUUU 1556

Qy        1026 CCCACTATCAAAGAGAGATTGGTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTG 1085
               ||| |  : ||||||||  :  :|| ||||||| :: :    |:    |   | ||  :
Db        1557 CCCUCCGUGAAAGAGAGGCUCUUGAACAGGAAACUUAUCAGAGUGGCAGGCGACGCAUUA 1616

Qy        1086 AAGATCAAGATCCCAGATCTGTATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACC 1145
                |||:|| | : || ||:|: :|:|: || :   | ||||| :: |:  |:|| :|||
Db        1617 GAGAUCAGGGUGCCUGAUCUAUAUGUGACCUUCCACGACAGAUUAGUGACUGAGUACAAG 1676

Qy        1146 AAGTCTGAGGAGTTACCGCATCTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATG 1205
                  :|:| |||  : ||    |: || |: | |||| |  : |||||| | ||    |:|
Db        1677 GCCUCUGUGGACAUGCCUGCGCUUGACAUUAGGAAGAAGAUGGAAGAAACGGAAGUGAUG 1736

Qy        1206 TACGACGCGTTATCAGAATTATCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAG 1265
               :|| | ||  : :|||| ::|:|  :  : | ||   |:|| || ::|||: : |
Db        1737 UACAAUGCACUUUCAGAGUUAUCGGUGUUAAGGGAGUCUGACAAAUUCGAUGUUGAUGUU 1796

Qy        1266 TTCAAAGACATGTGCAAGGCTTTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTT 1325
               ::     | |:|:|| |  |::: || |::   ||      ||||||    |: |: |:
Db        1797 UUUCCCAGAUGUGCCAAUCUUUGGAAGUUGACCCAAUGACGGCAGCGAAGGUUAUAGUC 1856

Qy        1326 GCAGTGGCCGAGAATAGAAGCGGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAAT 1385
               || |:       ||:   |||||: : ||:|: || :::||    || || |||| |||:
Db        1857 GCGGUCAUGAGCAAUGAGAGCGGUCUGACUCUCACAUUUGAACGACCUACUGAGGCGAAU 1916

Qy        1386 GTGGCTAAGGCTCT------TAAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCG 1439
               |: ||    ||: :      : ||   | ||| :| || |  |   :     ::    |
Db        1917 GUUGCGCUAGCUUUACAGGAUCAAGAGAAGGCUUCAGAAGGUGCUUUGGUAGUUACCUCA 1976

Qy        1440 ACATCCGAAGAGGTGAACGTAAATAAATTTTCTATTGCTGAGAAAGGGAGATTGCCTGTG 1499
               | |   |  || |        |  ||   ::| |: ||      || |  |      |
Db        1977 AGAGAAGUUGAAGAACCGUCCAUGAAGGGUUCGAUGGCCAGAGGAGAGUUACAAUUAGCU 2036

Qy        1500 TGTGCAGAAAGTCATGGTTTGACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTC 1559
                |:   |   |  |:  :  |  |    |  | :   || || ||||| : |||:|  :
Db        2037 GGUCUUGCUGGAGAUCAUCCGGAGUCGUCCUAUUCUAAGAACGAGGAGAUAGAGUCUUUA 2096

Qy        1560 AACGATTTCCATAAGGCTTGCGTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTC 1619
                |  | :: ||:| |||    |  ||:    : |::   ||||| |:|   :|| ::|:
Db        2097 GAGCAGUUUCAUAUGGCAACGGCAGAUUCGUUAAUUCGUAAGCAGAUGAGCUCGAUUGUG 2156

Qy        1620 TACACTGGCTCACTCAAAGTTCAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCG 1679
               :|||| ||  |  : ||||::|| ||||:||| |||: : : || ||  :|| ||| :|
Db        2157 UACACGGGUCCGAUUAAAGUUCAGCAAAUGAAAAACUUUAUCGAUAGCCUGGUAGCAUCA 2216

Qy        1680 TTGTCCGCCACTGTATCAAATCTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCT 1739
                : :| ||  | |: :| ||:|:   ||||   |: || ||:  ||  |    :||   :
Db        2217 CUAUCUGCUGCGGUGUCGAAUCUCGUCAAGAUCCUCAAAGAUACAGCUGCUAUUGACCUU 2276

Qy        1740 GATTCCAGGGAGAAAGTTGGTGTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCT 1799
               ||  || |  | ||  ::|| |: : |||:|:  | :  |  |||:|| :  :||||||
Db        2277 GAAACCCGUCAAAAGUUUGGAGUCUUGGAUGUUGCAUCUAGGAAGUGGUUAAUCAAACCA 2336

Qy        1800 GCGGCCAAAGGTCATTCATGGGGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCA 1859
                |||||||  |:||: ||:|||| |::|:        ||  | ||||      :   ||
Db        2337 ACGGCCAAGAGUCAUGCAUGGGGUGUUGUUGAAACCCACGCGAGGAAGUAUCAUGUGGCG 2396

Qy        1860 CTTCTATCTTATGAAGGAGATAGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTA 1919
               |:: :    :|:|| |   |  |  :||:|||       || :|||| || |: ||:|:
Db        2397 CUUUUGGAAUAUGAUGAGCAGGGUGUGGUGACAUGCGAUGAUUGGAGAAGAGUAGCUGUC 2456

Qy        1920 TCATCTGATACAATGGTATATTCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATG 1979
                  :|:||  |  : |: :|::| || |: || || |:|  || :|:| | | |    :
Db        2457 AGCUCUGAGUCUGUUGUUUAUUCCGACAUGGCGAAACUCAGAACUCUGCGCAGACUGCUU 2516

Qy        1980 AGAGACGGTGAACCCCACGAACCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGT 2039
                || |||| ||||| || |    :|  |||||| : |: |::|:||| || |: || ||
Db        2517 CGAAACGGAGAACCGCAUGUCAGUAGCGCAAAGGUUGUUCUUGUGGACGGAGUUCCGGGC 2576

Qy        2040 TGTGGAAAGTACAAAGGAGATTTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTT 2099
               :|:|| ||   ||||| |  : ::   ||  :: |: ::||:|| ||: : |: :: |:
Db        2577 UGUGGAAAACCAAAGAAAUUCUUUCCAGGGUUAAUUUUGAUGAAGAUCUAAUUUUAGUA 2636

Qy        2100 CCTGGAAAACAAGCTGCTGCTATGATCAGAAGAAGGGCTAATTCATCTGGACTGATAAGA 2159
               ||:|| || ||||| || |  |:||:||||||| | || ||::| :| ||  : |:
Db        2637 CCUGGGAAGCAAGCCGCGGAAAUGAUCAGAAGACGUGCGAAUUCCUCAGGGAUUAUUGUG 2696

Qy        2160 GCCACAATGGACAATGTGAGAACGGTAGATTCACTTCTAATGCAT---------CCAAAA 2210
               ||||| | |||||| |: | ||| |: ||::|  :  : |:| |:            | |
Db        2697 GCCACGAAGGACAACGUUAAAACCGUUGAUUCUUUCAUGAUGAAUUUGGGAAAAGCACA 2756

Qy        2211 CCGCGATCACACAAGAGGCTTTTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTT 2270
               |   |      ||||||| : :: |::||:||||||::||:| :||| || ||::|:|::
Db        2757 CGCUGUCAGUUCAAGAGGUUAUUCAUUGAUGAAGGGUUGAUGUUGCAUACUGGUUGUGUU 2816

Qy        2271 AACTTCCTGGTGCTTATCTCTGGTTGCGACATCGCATACATTTACGGAGATACACAGCAG 2330
               || :: |: |:|   |: :|    :|||| |: |||:|  :::||||||| |||||||||
Db        2817 AAUUUUCUUGUGGCGAUGUCAUUGUGCGAAAUUGCAUAUGUUUACGGAGACACACAGCAG 2876

Qy        2331 ATTCCTTTCATTAACAGAGTTCAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAA 2390
               |::|| : ||: || ||||::      ::||||:| |||   ||::::|  ||  :| ||
Db        2877 AUUCCAUACAUCAAUAGAGUUUCAGGAUUCCCGUACCCCGCCCAUUUUGCCAAAUUGGAA 2936
```

```
Qy          2391 GTGGATGAAGTTGAGATGAGGAGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTC 2450
                 |: || || |: ||||   | || || || |:  | :| ||||  ||:|: |    ::
Db          2937 GUUGACGAGGUGGAGACACGCAGAACUACUCUCCGUUGUCCAGCCGAUGUCACACAUUAU 2996

Qy          2451 CTACAATCGAAGTACGAAGGAGCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCA 2510
                 |:  |   ||  :| || ||    |: |  | |||::|  | |:  ||   :| |: :|
Db          2997 CUGAACAGGAGAUAUGAGGGCUUUGUCAUGAGCACUUCUUCGGUUAAAAAGUCUGUUUCG 3056

Qy          2511 TCTGAGATGATAGGCGGTAAGGGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGGAAA 2570
                    ||||:| : |||||    |  |:  : ||     : :| |||||  :  | || ||
Db          3057 CAGGAGAUGGUCGGCGGAGCCGCCGUGAUCAAUCCGAUCUCAAAACCCUUGCAUGGCAAG 3116

Qy          2571 ATTGTAACTTTCACTCAGGCTGATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTG 2630
                 |:  : ||::: || ||  | ||:|||   |   :       |  || :|:    |:|:
Db          3117 AUCCUGACUUUUACCCAAUCGGAUAAAGAAGCUCUGCUUUCAAGAGGGUAUUCAGAUGUU 3176

Qy          2631 AACACCGTTCATGAGATCCAAGGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACG 2690
                  |||| |: ||:||  : ||||| || || :     ||:|: :| |: |: || ::  ||
Db          3177 CACACUGUGCAUGAAGUGCAAGGCGAGACAUACUCUGAUGUUUCACUAGUUAGGUUAACC 3236

Qy          2691 GCAACTCCACTGACTCTGATTTCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGA 2750
                  | || ||| :  |  : |:: |         ||| ||:|:: : |:|||  :| | ||
Db          3237 CCUACACCAGUCUCCAUCAUUGCAGGAGACAGCCCACAUGUUUUGGUCGCAUUGUCAAGG 3296

Qy          2751 CACACAAAGAGCTTCAAATATTACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGT 2810
                 |||||        :||| :| :|||| |: |:  : ||:||:::||:    |: |::||
Db          3297 CACACCUGUUCGCUCAAGUACUACACUGUUGUUAUGGAUCCUUUAGUUAGUAUCAUUAGA 3356

Qy          2811 GATTTGTCTTCTTTAAGCTCCTTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGA 2870
                 ||: :        :||||:| : | : ::||| |:|:|:| ||: || ||||| |    |
Db          3357 GAUCUAGAGAAACUUAGCUCGUACUUGUUAGAUAUGUAUAAGGUCGAUGCAGGAACACAA 3416

Qy          2871 TAGCAATTACAGATGGATGCAGTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAA 2930
                 :|||||::|||||: ||  | |:|::||||||:   ||:|: :::|: ||| | || ||
Db          3417 UAGCAAUUACAGAUUGACUCGGUGUUCAAAGGUUCCAAUCUUUUUGUUGCAGCGCCAAAG 3476

Qy          2931 TCAGGAGACTTTCCAGATCTACAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACT 2990
                  | || ||  :: | ||: : |||:: :| :| ||:   :| |:||| || || || ||
Db          3477 ACUGGUGAUAUUUCUGAUAUGCAGUUUUACUAUGAUAAGUGUCUCCCAGGCAACAGCACC 3536

Qy          2991 ATACTTAACAAGTATGATGCTGTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAG 3050
                 |:  : || || : :||:||:|::||||:||||::   :|| | :    : ||:|: ||
Db          3537 AUGAUGAAUAAUUUUGAUGCUGUUACCAUGAGGUUGACUGACAUUUCAUUGAAUGUCAAA 3596

Qy          3051 GATTGTGTTCTTGATTTTTCCAAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTA 3110
                 ||::|  :  : ||: : :| ||   : :: |   ||| |||||    |    |   |:|
Db          3597 GAUUGCAUAUUGGAUAUGUCUAAGUCUGUUGCUGCGCCUAAGGAUCAAAUCAAACCACUA 3656

Qy          3111 GAGCCAGTTTTGCGTACCGCGGCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTG 3170
                    ||  :  : || || ||||| |||  |||| |     | ||||:| : |||||: :
Db          3657 AUACCUAUGGUACGAACGGCGGCAGAAAUGCCACGCCAGACUGGACUAUUGGAAAAUUUA 3716

Qy          3171 GTTGCAATGATTAAAAGAAATTTCAACGCACCAGACCTGACGGGGACGATTGACATTGAG 3230
                 |: || |:||::||||| || :: ||||||||| ||  :| | || |  |::|| |::||
Db          3717 GUGGCGAUGAUUAAAAGGAACUUUAACGCACCCGAGUUGUCUGGCAUCAUUGAUAUUGAA 3776

Qy          3231 AGCACCGCATCTGTTGTAGTAGATAAGTTTTTTGATAGCTATTTTATTAAAAAAGAAAAA 3290
                 |  || |||:|: : |: |:|||:|||::::::||:|| :|:::  ::||| || ||| |
Db          3777 AAUACUGCAUCUUUAGUUGUAGAUAAGUUUUUUGAUAGUUAUUUGCUUAAAGAAAAAAGA 3836

Qy          3291 TACACAAAAAATATTGCTGGAGTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAAC 3350
                  |  |||| || | :| :    :| : |  |  || :|  : |  |||:||:: |||||
Db          3837 AAACCAAAUAAAAAUGUUUCUUUGUUCAGUAGAGAGUCUCUCAAUAGAUGGUUAGAAAAG 3896

Qy          3351 AGGAAAGAAGTACTATTGGACGACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATC 3410
                   | || | |:|  | : | | |  : ||  | :   |::::  |||: :||| ||  :
Db          3897 CAGGAACAGGUAACAAUAGGCCAGCUCGCAGAUUUUGAUUUUGUAGAUUUGCCAGCAGUU 3956

Qy          3411 GATCAGTACAAGCACATGATCAAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAG 3470
                 ||:|||:|||  ||||:||: || || ||||| || || |||::||||  ::|||: ||
Db          3957 GAUCAGUACAGACACAUGAUUAAAGCACAACCCAAGCAAAAAUUGGACACUUCAAUCCAA 4016

Qy          3471 AATGAATACCCTGCTCTGCAAACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTG 3530
                 |  || :||||| ||: :||| || |::|: :||||::| ||  |||:||| |  |: ::
Db          4017 ACGGAGUACCCGGCUUUGCAGACGAUUGUGUACCAUUCAAAAAAGAUCAAUGCAAUAUUU 4076

Qy          3531 GCCGGTTTCT---CAGAGCTTACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTT 3587
                 | |   :: :     ||||::|| ||     : |: ||     ::||::| |  |  :::
Db          4077 GGCCCGUUGUUUAGUGAGCUUACUAGGCAAUUACUGGACAGUGUUGAUUCGAGCAGAUUU 4136

Qy          3588 CTTTTCTTTACTAGGAAAACTCCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCG 3647
                  : :: :: || || || || ||||  ||||:: | || :: ::|   ||:|:||||
Db          4137 UUGUUUUUCACAAGAAAGACACCAGCGCAGAUUGAGGAUUUCUUCGGAGAUCUCGACAGU 4196

Qy          3648 CACGTTCCTATGGATGTGTTAGAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAG 3707
                 || |: || |:|||:|: :: || |:|||:|: :| || :| || || :| ||||| ||
Db          4197 CAUGUGCCGAUGGAUGUCUUGGAGCUGGAUAUAUCAAAAUACGACAAAUCUCAGAAUGAA 4256

Qy          3708 TTTCATTGTGCTGTAGAGTATGAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCC 3767
                 :: || :|:|| |:||| :| || |: :||  ||||::|||: :  | || :: ::||
Db          4257 UUCCACUGUGCAGUAGAAUACGAGAUCUGGCGAAGAUUGGGUUUUGAAGACUUCUUGGGA 4316

Qy          3768 GAAGTGTGGAAACAAGGGCACAGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAG 3827
                 ||||: :||||||||||||| || || ||||  : |||||::| |  || || |: ||
Db          4317 GAAGUUUGGAAACAAGGGCAUAGAAAGACCACCCUCAAGGAUUAUACCGCAGGUAUAAAA 4376

Qy          3828 ACATGTCTGTGGTATCAAAGGAAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTT 3887
                 || :|  : :||:|:||||| || ||||| || |: || || ::||: || || ||:|:
Db          4377 ACUUGCAUCUGGUAUCAAAGAAAGAGCGGGGACGUCACGACGUUCAUUGGAAACACUGUG 4436

Qy          3888 ATAATAGCAGCTTGCTTGGGTTCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTT 3947
                 |: |: || || :| ::||  :| |:| : ||||:||| ||  : |: ||||| || :::
Db          4437 AUCAUUGCUGCAUGUUUGGCCUCGAUGCUUCCGAUGGAGAAAAUAAUCAAAGGAGCCUUU 4496

Qy          3948 TGTGGAGACGATTCCGTTTTGTATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCA 4007
                 :| || |||||:    :  :|:| :::||||||||::  || :: |  ||  : ||
Db          4497 UGCGGUGACGAUAGUCUGCUGUACUUUCCAAAGGGUUGUGAGUUUCCGGAUGUGCAACAC 4556

Qy          4008 TGTGCTAATCTCATGTGGAATTTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTT 4067
                 :  || ||:|: |:|:||||::::|| || ||||:|: :| |||   |:| || :||:::
Db          4557 UCCGCGAAUCUUAUGUGGAAUUUUGAAGCAAAACUGUUUAAAAAACAGUAUGGAUACUUU 4616

Qy          4068 TGTGGTAGATACATCATACACCATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAG 4127
                 :| || |||:|  : |:||| || || |  |||   |: |:|:|::| ||:||  : |||
Db          4617 UGCGGAAGAUAUGUAAUACAUCACGACAGAGGAUGCAUUGUGUAUUACGAUCCCCUAAAG 4676

Qy          4128 TTGATCTCCAAACTTGGGGCAAAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGG 4187
                 ::||:|:| ||||::|| || ||||| |:||||||::  || |||:: || |||:: ||
Db          4677 UUGAUCUCGAAACUUGGUGCUAAACACAUCAAGGAUUGGGAACACUUGGAGGAGUUCAGA 4736

Qy          4188 GTGTCTTTGTGCGATGTTGCTTGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTG 4247
                   |:|: : :| ||:|::||:  ::|| :    |||   :|       :   | ||| :|
Db          4737 AGGUCUCUUUGUGAUGUUGCUGUUUCGUU---GAACAAUUGUGCGUAUUACACACAGUUG 4793

Qy          4248 AACGCAGCTATCAAGGAGGTTCATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGT 4307
                  |||  ||: :   |||||::||:|| |||||   :   ||::||:::| :: :||  |:
Db          4794 GACGACGCUGUAUGGGAGGUUCAUAAGACCGCCCCUCCAGGUUCGUUUGUUUAUAAAAGU 4853

Qy          4308 GTTAACAAATTTTTGTGTGATAAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAG 4367
                  :    || : :::|: :||:||| :: : :::|||| :::|:::  |  :|||: :
Db          4854 CUGGUGAAGUAUUUGUCUGAUAAAGUUCUUUUUAGAAGUUUGUUUAUAGAUGGCUCUAGU 4913

Qy          4368 TCTCAGAGATACTGTCAAAATTAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACT 4427
                 : : | ||  |  |: || |: |  |||:: |: || |:  | |||  |||  |||:  :
Db          4914 UGUUAAAGGAAAAGUGAAUAUCAAUGAGUUUAUCGACCUGACAAAAAUGGAGAAGAUCUU 4973

Qy          4428 TCCGGCATTCATGACTAAGGTCAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGC 4487
                  ||| |  :  : ||    |: |||||:|::|     :| |  |: || || |: |:||
Db          4974 ACCGUCGAUGUUUACCCCUGUAAAGAGUGUUAUGUGUUCCAAAGUUGAUAAAAUAAUGGU 5033

Qy          4488 TGTTAAGAATGATAGTCTTTCTGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAA 4547
                 :  : ||||:||     : :| || |:  |  : |::||||| |::||| :  :: | |
Db          5034 UCAUGAGAAUGAGUCAUUGUCAGAGGUGAACCUUCUUAAAGGAGUUAAGCUUAUUGAUAG 5093

Qy          4548 AGGGTATGTGTGCTTAGCTGATTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTG 4607
                  || :| |: :| ::||| | :::||: |:  | || |||:||||  : || || || :|
```

```
Db        5094 UGGAUACGUCUGUUUAGCCGGUUUGGUCGUCACGGGCGAGUGGAACUUGCCUGACAAUUG 5153

Qy        4608 CCGTGGTGGTGTCAGTGTTTGTATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAAC 4667
               | | || ||:|: || |: :|: : |: || || || |:| ||||     | || || ||
Db        5154 CAGAGGAGGUGUGAGCGUGUGUCUGGUGGACAAAAGGAUGGAAAGAGCCGACGAGGCCAC 5213

Qy        4668 GCTGGGTGCGTATCACGCCCCTGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAA 4727
                |: ||  | :|  || |  | ||:   || || |  :::   :: ||| :  : || ||
Db        5214 UCUCGGAUCUUACUACACAGCAGCUGCAAAGAAAAGAUUUCAGUUCAAGGUCGUUCCCAA 5273

Qy        4728 TTATTCAATAACATCCGAGGATGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAA 4787
               ::|: | |:|||  || |||| ||   |||  ||   :|||||:  ::||: ||:|: |
Db        5274 UUAUGCUAUAACCACCCAGGACGCGAUGAAAAACGUCUGGCAAGUUUUAGUUAAUAUUAG 5333

Qy        4788 AGGAGTGGCTATGGAAGAAGGATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGT 4847
               |   |:|   |:|  ||  || : |:|:||  : :|: :||||:: |: :|  : :|: :
Db        5334 AAAUGUGAAGAUGUCAGCGGGUUUCUGUCCGCUUUCUCUGGAGUUUGUGUCGGUGUGUAU 5393

Qy        4848 AGTACATAAAAATAATGTAAGAAAAGGTTTGAGGAACGTATTTTGAGTGTGACAGACGG 4907
                |:  |:| |||:||: :|| |  |||:::||| ||    |::   |  |:|| ||||||
Db        5394 UGUUUAUAGAAAUAAUAUAAAAUUAGGUUUGAGAGAGAAGAUUACAAACGUGAGAGACGG 5453

Qy        4908 CTCGCCAATTGAACTCACTGAAAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGC 4967
                  ||| |: ||||: || ||| | |: |::|| |||::| :||| || |: || |:| |
Db        5454 AGGGCCCAUGGAACUUACAGAAGAAGUCGUUGAUGAGUUCAUGGAAGAUGUCCCUAUGUC 5513

Qy        4968 TGTGA 4972
                 : |
Db        5514 GAUCA 5518


RESULT 8
US-10-828-029-3
; Sequence 3, Application US/10828029
; Publication No. US20040171813A1
;   GENERAL INFORMATION:
;        APPLICANT: GARGER, STEPHEN
;                   HOLTZ, R. BARRY
;                   McCULLOCH, MICHAEL
;                   TURPEN, THOMAS
;        TITLE OF INVENTION: A PROCESS FOR ISOLATING AND
;                            PURIFYING VIRUSES SOLUBLE PROTEINS AND PEPTIDES
;                            FROM PLANT SOURCES
;        NUMBER OF SEQUENCES: 5
;        CORRESPONDENCE ADDRESS:
;             ADDRESSEE: Howrey & Simon
;             STREET: 1299 Pennsylvania Avenue N.W.
;             CITY: Washington
;             STATE: DC
;             COUNTRY: USA
;             ZIP: 20004
;        COMPUTER READABLE FORM:
;             MEDIUM TYPE: Diskette
;             COMPUTER: IBM Compatible
;             OPERATING SYSTEM: DOS
;             SOFTWARE: FastSEQ for Windows Version 2.0
;        CURRENT APPLICATION DATA:
;             APPLICATION NUMBER: US/10/828,029
;             FILING DATE: 20-Apr-2004
;             CLASSIFICATION: <Unknown>
;        PRIOR APPLICATION DATA:
;             APPLICATION NUMBER: US/09/962,527
;             FILING DATE: 24-Sep-2001
;             APPLICATION NUMBER: 09/037,751
;             FILING DATE: 10-march-1998
;        ATTORNEY/AGENT INFORMATION:
;             NAME: Halluin, Albert P
;             REGISTRATION NUMBER: 25,277
;             REFERENCE/DOCKET NUMBER: 00801.0140.999
;        TELECOMMUNICATION INFORMATION:
;             TELEPHONE: 650-463-8109
;             TELEFAX: 650-463-8400
;             TELEX: <Unknown>
```

```
;   INFORMATION FOR SEQ ID NO: 3:
;        SEQUENCE CHARACTERISTICS:
;             LENGTH: 6425 base pairs
;             TYPE: nucleic acid
;             STRANDEDNESS: single
;             TOPOLOGY: unknown
;        MOLECULE TYPE: Genomic RNA
;        SEQUENCE DESCRIPTION: SEQ ID NO: 3:
US-10-828-029-3

  Query Match             40.8%;  Score 2031;  DB 19;  Length 6425;
  Best Local Similarity   44.4%;  Pred. No. 0;
  Matches 2212;  Conservative  957;  Mismatches 1795;  Indels   21;  Gaps    4;

Qy           6 AAGGTAATTCCTGAGTTTCAAAGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAA 65
               ||   | : ||  | :: |||| ||| || ::: |||| :| ||||||  :||  | ||
Db         537 AAAACAGUCCCCAACUUCCAAAAGGAAGCAUUUGACAGAUACGCAGAAAUUCCUGAAGAC 596

Qy          66 GTCTGCTGCTCTAAAACTTTTCAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGA 125
               |    |:|    || ||::: |||      |||   || |||    || |    || |||
Db         597 GCUGUCUGUCACAAUACUUUCCAGACAAUGCGACAUCAGCCGAUGCAGCAAUCAGGCAGA 656

Qy         126 AGATACGCTGTTGCTCTGCACAGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCG 185
                  :| ||  ::|| |: |||||  : :|:|| |: || |   |:|||:: || || ||
Db         657 GUGUAUGCCAUUGCGCUACACAGCAUAUAUGACAUACCAGCCGAUGAGUUCGGGGCGGCA 716

Qy         186 TTAATATCTAAGAATATACATGTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTA 245
                :  :    || ||: : ||:   :| :|:|| ||:: |   ::  | ||     :  :
Db         717 CUCUUGAGGAAAAAUGUCCAUACGUGCUAUGCCGCUUUCCACUUCUCUGAGAACCUGCUU 776

Qy         246 CTAGACCAGACGGAGGTTACGCTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGAT 305
               |: ||  |  |  | |: |   :  | ||||:   |||   :::     | || || ||
Db         777 CUUGAAGAUUCAUACGUCAAUUUGGACGAAAUCAACGCGUGUUUUUCGCGCGAUGGAGAC 836

Qy         306 GATGTTTCTTTTTTCTTTGCTGATGAAAGTACTTTAAATTATAGTCATAAATACAAAAAT 365
                |  :  | ::::  :::||    || ||:||: : ||::|: |:||:|  :|    ||:
Db         837 AAGUUGACCUUUUCUUUUGCAUCAGAGAGUACUCUUAAUUAUUGUCAUAGUUAUUCUAAU 896

Qy         366 ATCTTGCATTATGTAGTTAAATCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAG 425
               |:  :  | :|:|:    ||| |::||:: || || :|:| :|||   |:::|| : |||
Db         897 AUUCUUAAGUAUGUGUGCAAAACUUACUUCCCGGCCUCUAAUAGAGAGGUUUACAUGAAG 956

Qy         426 GAATTTTTAGTCACTAGGGTTAATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTAT 485
               || :::::||:||| || |::||:|| :||::::|:|| ::: | | | :|||:|| : :
Db         957 GAGUUUUUAGUCACCAGAGUUAAUACCUGGUUUUGUAAGUUUUCUAGAAUAGAUACUUUU 1016

Qy         486 ATTCTGTACAAGAGTGTTAGACAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATG 545
                :: :|:||||  |:|:    ||   | |    ||:||:|| |||:: :|:   || |:|
Db        1017 CUUUUGUACAAAGGUGUGGCCCAUAAAAGUGUAGAUAGUGAGCAGUUUUAUACUGCAAUG 1076

Qy         546 GAAGACGCCTTTGCTTACAAGAAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTT 605
               |||||||| :    ::|||| || ||  : || |:|: |||||  || |||    :| ::
Db        1077 GAAGACGCAUGGCAUUACAAAAAGACUCUUGCAAUGUGCAACAGCGAGAGAAUCCUCCUU 1136

Qy         606 AGAGACACGGCTTCGGTTAACTTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCG 665
                  ||  |  | :| |: || :  :||:: || || |:|| ||| |:||: |: |:|||
Db        1137 GAGGAUUCAUCAUCAGUCAAUUACUGGUUUCCCAAAAUGAGGGAUAUGGUCAUCGUACCA 1196

Qy         666 CTGTTTGAGGGTTCTATTACCAGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGT 725
                : :: ||   ::|: :    |  |  |||| |||  | |  || |:| : |:
Db        1197 UUAUUCGACAUUUCUUUGGAGACUAGUAAGAGGACGCGCAAGGAAGUCUUAGUGUCCAAG 1256

Qy         726 GACTTCGTTTACACAGTGCTTAATCATATCAGAACATATCAAGCCAAAGCGTTAACTTAC 785
               || ::||: :  ||||:||::|| || |:  |||||:| || || |||||  : || :||
Db        1257 GAUUUCGUGUUUACAGUGCUUAACCACAUUCGAACAUACCAGGCGAAAGCUCUUACAUAC 1316

Qy         786 CAGAACGTATTATCTTTCGTGGAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACT 845
                  || |: :: :| :: |: || :| |:  ||:|  | |: |: |: || ||:|: ||
Db        1317 GCAAAUGUUUUGUCCUUUGUCGAAUCGAUUCGAUCGAGGGUAAUCAUUAACGGUGUGACA 1376

Qy         846 GCTAGGTCTGAATGGGATGTAGATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTC 905
               || |||:| |||:||||:|: || ||| |  :  : ||| ||::|:| |:||| :: : |
Db        1377 GCGAGGUCCGAAUGGGAUGUGGACAAAUCUUUGUUACAAUCCUUGUCCAUGACGUUUUAC 1436
```

```
Qy    906 TTGCAGACTAAGCTGGCTGCGCTTCAAGACGATATAGTAATGGGAAAGTTTCGGTGCTTG 965
           :||| ||:||||: || |  |:  | || ||  :| : |:  | |||::: |   |
Db   1437 CUGCAUACUAAGCUUGCCGUUCUAAAGGAUGACUUACUGAUUAGCAAGUUUAGUCUCGGU 1496

Qy    966 GATAAGACCACTTCTGAACTTATTTGGGATGAGGTGGGCAAATTTTTTGGAAACGTTTTC 1025
             || ||    :   | | : : :||||:||| :          :::|| ||||  ::
Db   1497 UCGAAAACGGUGUGCCAGCAUGUGUGGGAUGAGAUUUCGCUGGCGUUUGGGAACGCAUUU 1556

Qy   1026 CCCACTATCAAAGAGAGATTGGTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTG 1085
          ||| |  : ||||||||  :  :|| |||||| :: :    |:    |   | ||  :
Db   1557 CCCUCCGUGAAAGAGAGGCUCUUGAACAGGAAACUUAUCAGAGUGGCAGGCGACGCAUUA 1616

Qy   1086 AAGATCAAGATCCCAGATCTGTATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACC 1145
           |||:|| | : || ||:|: :|:|: || :   | |||||| :: |:  |:|| :|||
Db   1617 GAGAUCAGGGUGCCUGAUCUAUAUGUGACCUUCCACGACAGAUUAGUGACUGAGUACAAG 1676

Qy   1146 AAGTCTGAGGAGTTACCGCATCTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATG 1205
             :|:| |||  : ||    |: || |: | |||| |  : |||||| | ||    |:|
Db   1677 GCCUCUGUGGACAUGCCUGCGCUUGACAUUAGGAAGAAGAUGGAAGAAACGGAAGUGAUG 1736

Qy   1206 TACGACGCGTTATCAGAATTATCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAG 1265
          :|| | ||  : :|||| ::|:|  : :  | ||   |:|| || ::|||: : |
Db   1737 UACAAUGCACUUUCAGAGUUAUCGGUGUUAAGGGAGUCUGACAAAUUCGAUGUUGAUGUU 1796

Qy   1266 TTCAAAGACATGTGCAAGGCTTTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTT 1325
          ::     | |:|:|| |  |::: || |::   ||      ||||||    |: |: |:
Db   1797 UUUUCCCAGAUGUGCCAAUCUUUGGAAGUUGACCCAAUGACGGCAGCGAAGGUUAUAGUC 1856

Qy   1326 GCAGTGGCCGAGAATAGAAGCGGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAAT 1385
          || |:       ||:   |||||: : ||:|: || :::||    || || |||| |||:
Db   1857 GCGGUCAUGAGCAAUGAGAGCGGUCUGACUCUCACAUUUGAACGACCUACUGAGGCGAAU 1916

Qy   1386 GTGGCTAAGGCTCT------TAAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCG 1439
          |: ||    ||: :      : ||   | ||| :| || |  |   :     ::    |
Db   1917 GUUGCGCUAGCUUUACAGGAUCAAGAGAAGGCUUCAGAAGGUGCUUUGGUAGUUACCUCA 1976

Qy   1440 ACATCCGAAGAGGTGAACGTAAATAAATTTTCTATTGCTGAGAAAGGGAGATTGCCTGTG 1499
          | |   |  || |        |  ||   ::| |: ||      || |  |      |
Db   1977 AGAGAAGUUGAAGAACCGUCCAUGAAGGGUUCGAUGGCCAGAGGAGAGUUACAAUUAGCU 2036

Qy   1500 TGTGCAGAAAGTCATGGTTTGACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTC 1559
           |:   |   |  |:  :  |  |    |  | :   ||  || ||||| : |||:|  :
Db   2037 GGUCUUGCUGGAGAUCAUCCGGAGUCGUCCUAUUCUAAGAACGAGGAGAUAGAGUCUUUA 2096

Qy   1560 AACGATTTCCATAAGGCTTGCGTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTC 1619
           |  | :: ||:| |||    |  ||:    : |::   ||||| |:|   :|| ::|:
Db   2097 GAGCAGUUUCAUAUGGCAACGGCAGAUUCGUUAAUUCGUAAGCAGAUGAGCUCGAUUGUG 2156

Qy   1620 TACACTGGCTCACTCAAAGTTCAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCG 1679
          :|||| ||  |  : ||||::|| ||||:||| |||: : : || ||  :|| ||| :|
Db   2157 UACACGGGUCCGAUUAAAGUUCAGCAAAUGAAAAACUUUAUCGAUAGCCUGGUAGCAUCA 2216

Qy   1680 TTGTCCGCCACTGTATCAAATCTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCT 1739
           : :| ||  | |: :| ||:|:   ||||   |: || ||:  ||  |     :||   :
Db   2217 CUAUCUGCUGCGGUGUCGAAUCUCGUCAAGAUCCUCAAAGAUACAGCUGCUAUUGACCUU 2276

Qy   1740 GATTCCAGGGAGAAAGTTGGTGTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCT 1799
          ||  || |  | ||  ::|| |: : |||:|:  | :  |   |||:|| :  :||||||
Db   2277 GAAACCCGUCAAAAGUUUGGAGUCUUGGAUGUUGCAUCUAGGAAGUGGUUAAUCAAACCA 2336

Qy   1800 GCGGCCAAAGGTCATTCATGGGGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCA 1859
           |||||||  |:||: ||:||||| |::|:        ||  | ||||      :   ||
Db   2337 ACGGCCAAGAGUCAUGCAUGGGGUGUUGUUGAAACCCACGCGAGGAAGUAUCAUGUGGCG 2396

Qy   1860 CTTCTATCTTATGAAGGAGATAGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTA 1919
          |:: :    :|:||| |   |  |  :||:|||       || :|||| || |: ||:|:
Db   2397 CUUUUGGAAUAUGAUGAGCAGGGUGUGGUGACAUGCGAUGAUUGGAGAAGAGUAGCUGUC 2456

Qy   1920 TCATCTGATACAATGGTATATTCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATG 1979
             :|:||  |  : |: :|::| || |: || || |:|  || :|:| | | |    :
Db   2457 AGCUCUGAGUCUGUUGUUUAUUCCGACAUGGCGAAACUCAGAACUCUGCGCAGACUGCUU 2516

Qy   1980 AGAGACGGTGAACCCCACGAACCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGT 2039
           || |||| |||||| ||  |   :|  |||||| : |: |::|:||| || |: || ||
Db   2517 CGAAACGGAGAACCGCAUGUCAGUAGCGCAAAGGUUGUUCUUGUGGACGGAGUUCCGGGC 2576

Qy   2040 TGTGGAAAGTACAAAGGAGATTTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTT 2099
          :|:|| ||   ||||| |   : ::   ||  :: |: ::||:|| ||: : |: :: |:
Db   2577 UGUGGGAAAACCAAAGAAAUUCUUUCCAGGGUUAAUUUUGAUGAAGAUCUAAUUUUAGUA 2636

Qy   2100 CCTGGAAAACAAGCTGCTGCTATGATCAGAAGAAGGGCTAATTCATCTGGACTGATAAGA 2159
          ||:|| || ||||| || |  |:||:|||||| | || |::| :| ||   : |:
Db   2637 CCUGGGAAGCAAGCCGCGGAAAUGAUCAGAAGACGUGCGAAUUCCUCAGGGAUUAUUGUG 2696

Qy   2160 GCCACAATGGACAATGTGAGAACGGTAGATTCACTTCTAATGCAT---------CCAAAA 2210
          ||||| | |||||||| |: | ||| |: ||::| :  : :|:| |:            | |
Db   2697 GCCACGAAGGACAACGUUAAAACCGUUGAUUCUUUCAUGAUGAAUUUUGGGAAAAGCACA 2756

Qy   2211 CCGCGATCACACAAGAGGCTTTTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTT 2270
          |   |      ||||||| :  :: |::||:||||||::||:| :||| || ||::|:|::
Db   2757 CGCUGUCAGUUCAAGAGGUUAUUCAUUGAUGAAGGGUUGAUGUUGCAUACUGGUUGUGUU 2816

Qy   2271 AACTTCCTGGTGCTTATCTCTGGTTGCGACATCGCATACATTTACGGAGATACACAGCAG 2330
          || :: |: |:|   |: :|    :||||  |: |||:|  :::||||||| |||||||||
Db   2817 AAUUUUCUUGUGGCGAUGUCAUUGUGCGAAAUUGCAUAUGUUUACGGAGACACACAGCAG 2876

Qy   2331 ATTCCTTTCATTAACAGAGTTCAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAA 2390
          |::|| : ||: || ||||::      ::||||:| |||    ||::::|   ||  :| ||
Db   2877 AUUCCAUACAUCAAUAGAGUUUCAGGAUUCCCGUACCCCGCCCAUUUUGCCAAAUUGGAA 2936

Qy   2391 GTGGATGAAGTTGAGATGAGGAGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTC 2450
          |: || || |: ||||   | || || || |:  | :| ||||  ||:|: |    ::
Db   2937 GUUGACGAGGUGGAGACACGCAGAACUACUCUCCGUUGUCCAGCCGAUGUCACACAUUAU 2996

Qy   2451 CTACAATCGAAGTACGAAGGAGCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCA 2510
          |:  |   ||  :| || ||    |: |  | |||::|  | |:  ||    :| |: :|
Db   2997 CUGAACAGGAGAUAUGAGGGCUUUGUCAUGAGCACUUCUUCGGUUAAAAAGUCUGUUUCG 3056

Qy   2511 TCTGAGATGATAGGCGGTAAGGGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGGAAA 2570
             ||||:| : |||||    |  |:  :  ||     : :| ||||| :  | || ||
Db   3057 CAGGAGAUGGUCGGCGGAGCCGCCGUGAUCAAUCCGAUCUCAAAACCCUUGCAUGGCAAG 3116

Qy   2571 ATTGTAACTTTCACTCAGGCTGATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTG 2630
          |:  : ||::: || ||  | ||:|||   |   :       |  || :|:    |:|:
Db   3117 AUCCUGACUUUUACCCAAUCGGAUAAAGAAGCUCUGCUUUCAAGAGGGUAUUCAGAUGUU 3176

Qy   2631 AACACCGTTCATGAGATCCAAGGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACG 2690
           |||| |: ||:||  : ||||| || ||  :     ||:|: :| |: |: || :: ||
Db   3177 CACACUGUGCAUGAAGUGCAAGGCGAGACAUACUCUGAUGUUUCACUAGUUAGGUUAACC 3236

Qy   2691 GCAACTCCACTGACTCTGATTTCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGA 2750
           | || ||| :  |  : |:: |           ||| ||:|:: : |:|||  :| | ||
Db   3237 CCUACACCAGUCUCCAUCAUUGCAGGAGACAGCCCACAUGUUUUGGUCGCAUUGUCAAGG 3296

Qy   2751 CACACAAAGAGCTTCAAATATTACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGT 2810
          |||||        :||| :| :|||| |: |:  : ||:|||:::||:   |: |::||
Db   3297 CACACCUGUUCGCUCAAGUACUACACUGUUGUUAUGGAUCCUUUAGUUAGUAUCAUUAGA 3356

Qy   2811 GATTTGTCTTCTTTAAGCTCCTTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGA 2870
          ||: :        : |||:| : | : ::||| |:|:|:| ||: || ||||| |    |
Db   3357 GAUCUAGAGAAACUUAGCUCGUACUUGUUAGAUAUGUAUAAGGUCGAUGCAGGAACACAA 3416

Qy   2871 TAGCAATTACAGATGGATGCAGTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAA 2930
          :|||||::||||: ||  | |:|::||||||:   ||:|: :::|: ||| | || ||
Db   3417 UAGCAAUUACAGAUUGACUCGGUGUUCAAAGGUUCCAAUCUUUUUGUUGCAGCGCCAAAG 3476

Qy   2931 TCAGGAGACTTTCCAGATCTACAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACT 2990
           | || ||  :: | ||: : |||:: :| :| ||:    :| |:||| || || || ||
Db   3477 ACUGGUGAUAUUUCUGAUAUGCAGUUUUACUAUGAUAAGUGUCUCCCAGGCAACAGCACC 3536

Qy   2991 ATACTTAACAAGTATGATGCTGTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAG 3050
          |:  : || || : :||:||:|::||||:||||::   :|| | :    : ||:|: ||
Db   3537 AUGAUGAAUAAUUUUGAUGCUGUUACCAUGAGGUUGACUGACAUUUCAUUGAAUGUCAAA 3596

Qy   3051 GATTGTGTTCTTGATTTTTCCAAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTA 3110
```

```
               ||::|  :  : ||: : :| ||   : :: |   ||| |||||    |    |   |:|
Db        3597 GAUUGCAUAUUGGAUAUGUCUAAGUCUGUUGCUGCGCCUAAGGAUCAAAUCAAACCACUA 3656

Qy        3111 GAGCCAGTTTTGCGTACCGCGGCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTG 3170
                  ||  :  : || || ||||| |||  |||| |     | ||||:| : |||||: :
Db        3657 AUACCUAUGGUACGAACGGCGGCAGAAAUGCCACGCCAGACUGGACUAUUGGAAAAUUUA 3716

Qy        3171 GTTGCAATGATTAAAAGAAATTTCAACGCACCAGACCTGACGGGGACGATTGACATTGAG 3230
               |: || |:||::||||| || :: |||||||| ||  :| | || |  |::|| |::||
Db        3717 GUGGCGAUGAUUAAAAGGAACUUUAACGCACCCGAGUUGUCUGGCAUCAUUGAUAUUGAA 3776

Qy        3231 AGCACCGCATCTGTTGTAGTAGATAAGTTTTTTGATAGCTATTTTATTAAAAAAGAAAAA 3290
               |  || |||:|: : |: |:|||:|||::::::|:||  :|:::  ::||| || ||| |
Db        3777 AAUACUGCAUCUUUAGUUGUAGAUAAGUUUUUUGAUAGUUAUUUGCUUAAAGAAAAAAGA 3836

Qy        3291 TACACAAAAAATATTGCTGGAGTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAAC 3350
                |  |||| || | :| :    :| : |  |  || :|  : |  |||:||:: |||||
Db        3837 AAACCAAAUAAAAAUGUUUCUUUGUUCAGUAGAGAGUCUCUCAAUAGAUGGUUAGAAAAG 3896

Qy        3351 AGGAAAGAAGTACTATTGGACGACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATC 3410
                 ||| | |:|  | : | | |  : ||  | :   |::::  |||: :||| ||  :
Db        3897 CAGGAACAGGUAACAAUAGGCCAGCUCGCAGAUUUUGAUUUUGUAGAUUUGCCAGCAGUU 3956

Qy        3411 GATCAGTACAAGCACATGATCAAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAG 3470
               ||:|||:|||  ||||:||: || || ||||| || || |||::||||  ::|||: ||
Db        3957 GAUCAGUACAGACACAUGAUUAAAGCACAACCCAAGCAAAAAUUGGACACUUCAAUCCAA 4016

Qy        3471 AATGAATACCCTGCTCTGCAAACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTG 3530
               |  || :|||| ||: :||| || |::|: :||||::| ||  |||:||| |  |: ::
Db        4017 ACGGAGUACCCGGCUUUGCAGACGAUUGUGUACCAUUCAAAAAAGAUCAAUGCAAUAUUU 4076

Qy        3531 GCCGGTTTCT---CAGAGCTTACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTT 3587
               | |   :: :     ||||::|| |||    : |: ||     ::||::| |  |  :::
Db        4077 GGCCCGUUGUUUAGUGAGCUUACUAGGCAAUUACUGGACAGUGUUGAUUCGAGCAGAUUU 4136

Qy        3588 CTTTTCTTTACTAGGAAAACTCCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCG 3647
                : :: :: || || || || ||||  ||||:: | || :: ::|   ||:|:||||
Db        4137 UUGUUUUUCACAAGAAAGACACCAGCGCAGAUUGAGGAUUUCUUCGGAGAUCUCGACAGU 4196

Qy        3648 CACGTTCCTATGGATGTGTTAGAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAG 3707
               || |: || |:|||:|: :: || |:|||:|: :| || :| || || :| ||||| ||
Db        4197 CAUGUGCCGAUGGAUGUCUUGGAGCUGGAUAUAUCAAAAUACGACAAAUCUCAGAAUGAA 4256

Qy        3708 TTTCATTGTGCTGTAGAGTATGAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCC 3767
               :: || :|:|| |:||| :| || |: :||  ||||::|||: :  | || :: ::||
Db        4257 UUCCACUGUGCAGUAGAAUACGAGAUCUGGCGAAGAUUGGGUUUUGAAGACUUCUUGGGA 4316

Qy        3768 GAAGTGTGGAAACAAGGGCACAGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAG 3827
               ||||: :||||||||||||| || || || ||  : |||||::| |  || || |: ||
Db        4317 GAAGUUUGGAAACAAGGGCAUAGAAAGACCACCCUCAAGGAUUAUACCGCAGGUAUAAAA 4376

Qy        3828 ACATGTCTGTGGTATCAAAGGAAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTT 3887
               || :|  : ||:|:||||| || ||||| || |: || || ::||: || || ||:|:
Db        4377 ACUUGCAUCUGGUAUCAAAGAAAGAGCGGGGACGUCACGACGUUCAUUGGAAACACUGUG 4436

Qy        3888 ATAATAGCAGCTTGCTTGGGTTCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTT 3947
               |: |: || || :| ::||  :| |:| : ||||:||| ||  : |: ||||| || :::
Db        4437 AUCAUUGCUGCAUGUUUGGCCUCGAUGCUUCCGAUGGAGAAAAUAAUCAAAGGAGCCUUU 4496

Qy        3948 TGTGGAGACGATTCCGTTTTGTATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCA 4007
               :| || |||||:    :  :|:| :::|||||||||:: || :: || ||  : ||
Db        4497 UGCGGUGACGAUAGUCUGCUGUACUUUCCAAAGGGUUGUGAGUUUCCGGAUGUGCAACAC 4556

Qy        4008 TGTGCTAATCTCATGTGGAATTTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTT 4067
               :  || ||:|: |:|:||||::::|| || ||||:|: :| |||   |:| || :||:::
Db        4557 UCCGCGAAUCUUAUGUGGAAUUUUGAAGCAAAACUGUUUAAAAAACAGUAUGGAUACUUU 4616

Qy        4068 TGTGGTAGATACATCATACACCATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAG 4127
               :| || |||:|  : |:||| || || |  |||   |: |:|:|::| ||:||  : |||
Db        4617 UGCGGAAGAUAUGUAAUACAUCACGACAGAGGAUGCAUUGUGUAUUACGAUCCCCUAAAG 4676

Qy        4128 TTGATCTCCAAACTTGGGGCAAAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGG 4187
               ::||:|:| ||||::|| || ||||| |:||||||::  || |||:: || |||:: ||
Db        4677 UUGAUCUCGAAACUUGGUGCUAAACACAUCAAGGAUUGGGAACACUUGGAGGAGUUCAGA 4736

Qy        4188 GTGTCTTTGTGCGATGTTGCTTGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTG 4247
                 |:|: : :| ||:|::||:  ::|| :    |||   :|       :   | ||| :|
Db        4737 AGGUCUCUUUGUGAUGUUGCUGUUUCGUU---GAACAAUUGUGCGUAUUACACACAGUUG 4793

Qy        4248 AACGCAGCTATCAAGGAGGTTCATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGT 4307
                |||  ||: :   |||||::||:|| |||||   :   ||::||:::| :: :||  |:
Db        4794 GACGACGCUGUAUGGGAGGUUCAUAAGACCGCCCCUCCAGGUUCGUUUGUUUAUAAAAGU 4853

Qy        4308 GTTAACAAATTTTTGTGTGATAAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAG 4367
                :    || : :::|: :||:||| :: : :::|||| :::|::: :| |:|||: :
Db        4854 CUGGUGAAGUAUUUGUCUGAUAAAGUUCUUUUUAGAAGUUUGUUUAUAGAUGGCUCUAGU 4913

Qy        4368 TCTCAGAGATACTGTCAAAATTAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACT 4427
               : : | ||  |  |: || |: |  |||:: |: || |:  | |||  |||  |||:  :
Db        4914 UGUUAAAGGAAAAGUGAAUAUCAAUGAGUUUAUCGACCUGACAAAAAUGGAGAAGAUCUU 4973

Qy        4428 TCCGGCATTCATGACTAAGGTCAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGC 4487
                ||| |  :  : ||    |: |||||:|::|     :| |  |: || || |: |:||
Db        4974 ACCGUCGAUGUUUACCCCUGUAAAGAGUGUUAUGUGUUCCAAAGUUGAUAAAAUAAUGGU 5033

Qy        4488 TGTTAAGAATGATAGTCTTTCTGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAA 4547
               :  : ||||:||     : :| || |:  |  : |::||||| |::||| :  :: | |
Db        5034 UCAUGAGAAUGAGUCAUUGUCAGAGGUGAACCUUCUUAAAGGAGUUAAGCUUAUUGAUAG 5093

Qy        4548 AGGGTATGTGTGCTTAGCTGATTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTG 4607
                || :| |: :| ::||| | :::||: |:  | || |||:||||  : || || || :|
Db        5094 UGGAUACGUCUGUUUAGCCGGUUUGGUCGUCACGGGCGAGUGGAACUUGCCUGACAAUUG 5153

Qy        4608 CCGTGGTGGTGTCAGTGTTTGTATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAAC 4667
               | | || ||:|: || |: :|: : |: || || || |:| ||||     | || || ||
Db        5154 CAGAGGAGGUGUGAGCGUGUGUCUGGUGGACAAAAGGAUGGAAAGAGCCGACGAGGCCAC 5213

Qy        4668 GCTGGGTGCGTATCACGCCCCTGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAA 4727
                |: ||  | :|  || |  | ||:   || || |  :::   :: ||| :  : || ||
Db        5214 UCUCGGAUCUUACUACACAGCAGCUGCAAAGAAAAGAUUUCAGUUCAAGGUCGUUCCCAA 5273

Qy        4728 TTATTCAATAACATCCGAGGATGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAA 4787
               ::|: | |:||| || |||| ||   |||  ||   :||||||: ::||: ||:|: |
Db        5274 UUAUGCUAUAACCACCCAGGACGCGAUGAAAAACGUCUGGCAAGUUUUAGUUAAUAUUAG 5333

Qy        4788 AGGAGTGGCTATGGAAGAAGGATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGT 4847
               |   |:|   |:|  ||  || : |:|:||  : :|: :||||:: |: :|  : :|: :
Db        5334 AAAUGUGAAGAUGUCAGCGGGUUUCUGUCCGCUUUCUCUGGAGUUUGUGUCGGUGUGUAU 5393

Qy        4848 AGTACATAAAAATAATGTAAGAAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGG 4907
                |:  |:| |||:||: :|| |  |||:::||| ||    |::   |  |:|| ||||||
Db        5394 UGUUUAUAGAAAUAAUAUAAAAUUAGGUUUGAGAGAGAAGAUUACAAACGUGAGAGACGG 5453

Qy        4908 CTCGCCAATTGAACTCACTGAAAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGC 4967
                  ||| |: ||||: || ||| | |: |::|| |||::| :||| || |: || |:| |
Db        5454 AGGGCCCAUGGAACUUACAGAAGAAGUCGUUGAUGAGUUCAUGGAAGAUGUCCCUAUGUC 5513

Qy        4968 TGTGA 4972
                 : |
Db        5514 GAUCA 5518


RESULT 9
US-09-962-527-5
; Sequence 5, Application US/09962527
; Publication No. US20030049813A1
;   GENERAL INFORMATION:
;        APPLICANT: GARGER, STEPHEN
;                   HOLTZ, R. BARRY
;                   McCULLOCH, MICHAEL
;                   TURPEN, THOMAS
;        TITLE OF INVENTION: A PROCESS FOR ISOLATING AND
;                            PURIFYING VIRUSES SOLUBLE PROTEINS AND PEPTIDES
;                            FROM PLANT SOURCES
;        NUMBER OF SEQUENCES: 5
;        CORRESPONDENCE ADDRESS:
```

```
;          ADDRESSEE: Howrey & Simon
;          STREET: 1299 Pennsylvania Avenue N.W.
;          CITY: Washington
;          STATE: DC
;          COUNTRY: USA
;          ZIP: 20004
;      COMPUTER READABLE FORM:
;          MEDIUM TYPE: Diskette
;          COMPUTER: IBM Compatible
;          OPERATING SYSTEM: DOS
;          SOFTWARE: FastSEQ for Windows Version 2.0
;      CURRENT APPLICATION DATA:
;          APPLICATION NUMBER: US/09/962,527
;          FILING DATE: 24-Sep-2001
;          CLASSIFICATION: <Unknown>
;      PRIOR APPLICATION DATA:
;          APPLICATION NUMBER: 09/037,751
;          FILING DATE: 10-march-1998
;      ATTORNEY/AGENT INFORMATION:
;          NAME: Halluin, Albert P
;          REGISTRATION NUMBER: 25,277
;          REFERENCE/DOCKET NUMBER: 00801.0140.999
;      TELECOMMUNICATION INFORMATION:
;          TELEPHONE: 650-463-8109
;          TELEFAX: 650-463-8400
;          TELEX: <Unknown>
;  INFORMATION FOR SEQ ID NO: 5:
;      SEQUENCE CHARACTERISTICS:
;          LENGTH: 6446 base pairs
;          TYPE: nucleic acid
;          STRANDEDNESS: single
;          TOPOLOGY: unknown
;      MOLECULE TYPE: Genomic RNA
;      SEQUENCE DESCRIPTION: SEQ ID NO: 5:
US-09-962-527-5

  Query Match             40.8%;  Score 2031;  DB 10;  Length 6446;
  Best Local Similarity   44.4%;  Pred. No. 0;
  Matches 2212;  Conservative  957;  Mismatches 1795;  Indels   21;  Gaps    4;

Qy            6 AAGGTAATTCCTGAGTTTCAAAGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAA 65
                ||   | : ||  | :: |||| ||| || ::: |||| :| ||||||  :||  | ||
Db          537 AAAACAGUCCCCAACUUCCAAAAGGAAGCAUUUGACAGAUACGCAGAAAUUCCUGAAGAC 596

Qy           66 GTCTGCTGCTCTAAAACTTTTCAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGA 125
                |    |:|    || ||::: |||      |||   || |||    || |   || |||
Db          597 GCUGUCUGUCACAAUACUUUCCAGACAAUGCGACAUCAGCCGAUGCAGCAAUCAGGCAGA 656

Qy          126 AGATACGCTGTTGCTCTGCACAGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCG 185
                   :| ||  ::|| |: |||||  : :|:|| |: || |   |:|||:: || || ||
Db          657 GUGUAUGCCAUUGCGCUACACAGCAUAUAUGACAUACCAGCCGAUGAGUUCGGGGCGGCA 716

Qy          186 TTAATATCTAAGAATATACATGTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTA 245
                 :  :    || ||: : ||:    :|  :|:||  ||:: |   ::  |  ||     :  :
Db          717 CUCUUGAGGAAAAAUGUCCAUACGUGCUAUGCCGCUUUCCACUUCUCUGAGAACCUGCUU 776

Qy          246 CTAGACCAGACGGAGGTTACGCTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGAT 305
                |: ||  |  |  | |: |   :  | ||||:   |||   :::     | || || ||
Db          777 CUUGAAGAUUCAUACGUCAAUUUGGACGAAAUCAACGCGUGUUUUUCGCGCGAUGGAGAC 836

Qy          306 GATGTTTCTTTTTTCTTTGCTGATGAAAGTACTTTAAATTATAGTCATAAATACAAAAAT 365
                 |  :  | ::::  :::||    || ||:||: : ||::|: |:||:|  :|    ||:
Db          837 AAGUUGACCUUUUCUUUUGCAUCAGAGAGUACUCUUAAUUAUUGUCAUAGUUAUUCUAAU 896

Qy          366 ATCTTGCATTATGTAGTTAAATCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAG 425
                |:  :  | :|:|:    ||| |::||:: || || :|:| :|||   |:::|| : |||
Db          897 AUUCUUAAGUAUGUGUGCAAAACUUACUUCCCGGCCUCUAAUAGAGAGGUUUACAUGAAG 956

Qy          426 GAATTTTTAGTCACTAGGGTTAATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTAT 485
                || :::::||:||| || |::||:|| :||:::|:||  ::: | | | :|||:|| : :
Db          957 GAGUUUUUAGUCACCAGAGUUAAUACCUGGUUUUGUAAGUUUUCUAGAAUAGAUACUUUU 1016

Qy          486 ATTCTGTACAAGAGTGTTAGACAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATG 545
                 :: :|:||||  |:|:    ||   | |    ||:||:|| |||:: :|:   || |:|
Db         1017 CUUUUGUACAAAGGUGUGGCCCAUAAAAGUGUAGAUAGUGAGCAGUUUUAUACUGCAAUG 1076

Qy          546 GAAGACGCCTTTGCTTACAAGAAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTT 605
                |||||||| :    ::|||| || ||  : || |:|: |||||  || |||    :| ::
Db         1077 GAAGACGCAUGGCAUUACAAAAAGACUCUUGCAAUGUGCAACAGCGAGAGAAUCCUCCUU 1136

Qy          606 AGAGACACGGCTTCGGTTAACTTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCG 665
                   ||  |  | :| |: || :  :||:: || || |:|| ||| |:||: |: |:|||
Db         1137 GAGGAUUCAUCAUCAGUCAAUUACUGGUUUCCCAAAAUGAGGGAUAUGGUCAUCGUACCA 1196

Qy          666 CTGTTTGAGGGTTCTATTACCAGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGT 725
                 : :: ||   ::|: :    |  |  |||| |||  | |  || |:| : |:
Db         1197 UUAUUCGACAUUUCUUUGGAGACUAGUAAGAGGACGCGCAAGGAAGUCUUAGUGUCCAAG 1256

Qy          726 GACTTCGTTTACACAGTGCTTAATCATATCAGAACATATCAAGCCAAAGCGTTAACTTAC 785
                || ::||: :  ||||:||::|| || |:  |||||:| || || |||||  : || :||
Db         1257 GAUUUCGUGUUUACAGUGCUUAACCACAUUCGAACAUACCAGGCGAAAGCUCUUACAUAC 1316

Qy          786 CAGAACGTATTATCTTTCGTGGAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACT 845
                   || |: :: :| :: |: || :| |:  ||:|  | |: |: |: || ||:|: ||
Db         1317 GCAAAUGUUUUGUCCUUUGUCGAAUCGAUUCGAUCGAGGGUAAUCAUUAACGGUGUGACA 1376

Qy          846 GCTAGGTCTGAATGGGATGTAGATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTC 905
                || |||:| |||:||||:|:| || ||| |  :  : ||| ||::|:| |:||| :: : |
Db         1377 GCGAGGUCCGAAUGGGAUGUGGACAAAUCUUUGUUACAAUCCUUGUCCAUGACGUUUUAC 1436

Qy          906 TTGCAGACTAAGCTGGCTGCGCTTCAAGACGATATAGTAATGGAAAGTTTCGGTGCTTG 965
                 :||| ||:||||: || |  |:  | || ||  :| : |:  | |||::: |   |
Db         1437 CUGCAUACUAAGCUUGCCGUUCUAAAGGAUGACUUACUGAUUAGCAAGUUUAGUCUCGGU 1496

Qy          966 GATAAGACCACTTCTGAACTTATTTGGGATGAGGTGGGCAAATTTTTGGAAACGTTTTC 1025
                   || ||    :   | | : : :||||:||| :          :::|| ||||  ::
Db         1497 UCGAAAACGGUGUGCCAGCAUGUGUGGGAUGAGAUUUCGCUGGCGUUUGGAACGCAUUU 1556

Qy         1026 CCCACTATCAAAGAGAGATTGGTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTG 1085
                ||| |  : ||||||||  :  :|| ||||||| :: :    |:    |   | ||  :
Db         1557 CCCUCCGUGAAAGAGAGGCUCUUGAACAGGAAACUUAUCAGAGUGGCAGGCGACGCAUUA 1616

Qy         1086 AAGATCAAGATCCCAGATCTGTATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACC 1145
                 |||:|| | : || ||:|: :|:|:| || :   | ||||| :: |:  |:|| :|||
Db         1617 GAGAUCAGGGUGCCUGAUCUAUAUGUGACCUUCCACGACAGAUUAGUGACUGAGUACAAG 1676

Qy         1146 AAGTCTGAGGAGTTACCGCATCTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATG 1205
                   :|:| |||  : ||    |: || |: | |||| |  : |||||| | ||    |:|
Db         1677 GCCUCUGUGGACAUGCCUGCGCUUGACAUUAGGAAGAAGAUGGAAGAAACGGAAGUGAUG 1736

Qy         1206 TACGACGCGTTATCAGAATTATCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAG 1265
                :|| | ||  : :|||| ::|:|  :  : | ||   |:|| || ::|||: : |
Db         1737 UACAAUGCACUUUCAGAGUUAUCGGUGUUAAGGGAGUCUGACAAAUUCGAUGUUGAUGUU 1796

Qy         1266 TTCAAAGACATGTGCAAGGCTTTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTT 1325
                ::     | |:|:|| |  |::: || |::   ||      ||||||    |: |: |:
Db         1797 UUUUCCCAGAUGUGCCAAUCUUUGGAAGUUGACCCAAUGACGGCAGCGAAGGUUAUAGUC 1856

Qy         1326 GCAGTGGCCGAGAATAGAAGCGGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAAT 1385
                || |:       ||:   |||||: : ||:|: || :::||    || || |||| |||:
Db         1857 GCGGUCAUGAGCAAUGAGAGCGGUCUGACUCUCACAUUUGAACGACCUACUGAGGCGAAU 1916

Qy         1386 GTGGCTAAGGCTCT------TAAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCG 1439
                |: ||    ||: :      : ||   | ||| :| || |  |   :     ::    |
Db         1917 GUUGCGCUAGCUUUACAGGAUCAAGAGAAGGCUUCAGAAGGUGCUUUGGUAGUUACCUCA 1976

Qy         1440 ACATCCGAAGAGGTGAACGTAAATAAATTTTCTATTGCTGAGAAAGGAGATTGCCTGTG 1499
                | |   |  || |        |  ||   ::| |: ||      || |  |      |
Db         1977 AGAGAAGUUGAAGAACCGUCCAUGAAGGGUUCGAUGGCCAGAGGAGAGUUACAAUUAGCU 2036

Qy         1500 TGTGCAGAAAGTCATGGTTTGACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTC 1559
                 |:   |   |  |:  :  |  |    |  | :   || || ||||| : |||:|  :
Db         2037 GGUCUUGCUGGAGAUCAUCCGGAGUCGUCCUAUUCUAAGAACGAGGAGAUAGAGUCUUUA 2096

Qy         1560 AACGATTTCCATAAGGCTTGCGTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTC 1619
                 |  | :: ||:| |||    |  ||:    : |::   ||||| |:|   :|| ::|:
```

```
Db   2097 GAGCAGUUUCAUAUGGCAACGGCAGAUUCGUUAAUUCGUAAGCAGAUGAGCUCGAUUGUG 2156

Qy   1620 TACACTGGCTCACTCAAAGTTCAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCG 1679
          :|||| ||  |  : ||||::|| ||||:||| |||: : : || ||  :|| ||| :|
Db   2157 UACACGGGUCCGAUUAAAGUUCAGCAAAUGAAAAACUUUAUCGAUAGCCUGGUAGCAUCA 2216

Qy   1680 TTGTCCGCCACTGTATCAAATCTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCT 1739
           : :| ||  | |: :| ||:|:   ||||   |: || ||:  ||  |    :||   :
Db   2217 CUAUCUGCUGCGGUGUCGAAUCUCGUCAAGAUCCUCAAAGAUACAGCUGCUAUUGACCUU 2276

Qy   1740 GATTCCAGGGAGAAAGTTGGTGTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCT 1799
          ||  || |  | ||  ::|| |: : |||:|:  | :  |  |||:|| :  :||||||
Db   2277 GAAACCCGUCAAAAGUUUGGAGUCUUGGAUGUUGCAUCUAGGAAGUGGUUAAUCAAACCA 2336

Qy   1800 GCGGCCAAAGGTCATTCATGGGGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCA 1859
           |||||||  |:||: ||:|||| |::|:        ||  | ||||      :   ||
Db   2337 ACGGCCAAGAGUCAUGCAUGGGGUGUUGUUGAAACCCACGCGAGGAAGUAUCAUGUGGCG 2396

Qy   1860 CTTCTATCTTATGAAGGAGATAGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTA 1919
          |:: :    :|:|| |   |  |  :||:|||       || :|||| || |: ||:|:
Db   2397 CUUUUGGAAUAUGAUGAGCAGGGUGUGGUGACAUGCGAUGAUUGGAGAAGAGUAGCUGUC 2456

Qy   1920 TCATCTGATACAATGGTATATTCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATG 1979
             :|:||  |  : |: :|::| || |: || || |:|  || :|:| | | |    :
Db   2457 AGCUCUGAGUCUGUUGUUUAUUCCGACAUGGCGAAACUCAGAACUCUGCGCAGACUGCUU 2516

Qy   1980 AGAGACGGTGAACCCCACGAACCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGT 2039
           || |||| ||||| || |    :|  |||||| : |: |::|:||| || |: || ||
Db   2517 CGAAACGGAGAACCGCAUGUCAGUAGCGCAAAGGUUGUUCUUGUGGACGGAGUUCCGGGC 2576

Qy   2040 TGTGGAAAGTACAAAGGAGATTTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTT 2099
          :|:|| ||   ||||| |  : ::  |||  :: |: ::||:|| ||: : |: :: |:
Db   2577 UGUGGGAAAACCAAAGAAAUUCUUUCCAGGGUUAAUUUUGAUGAAGAUCUAAUUUUAGUA 2636

Qy   2100 CCTGGAAAACAAGCTGCTGCTATGATCAGAAGAAGGGCTAATTCATCTGGACTGATAAGA 2159
          ||:|| || ||||| || |  |:||:|||||||| | || ||::| :| ||  : |:
Db   2637 CCUGGGAAGCAAGCCGCGGAAAUGAUCAGAAGACGUGCGAAUUCCUCAGGGAUUAUUGUG 2696

Qy   2160 GCCACAATGGACAATGTGAGAACGGTAGATTCACTTCTAATGCAT---------CCAAAA 2210
          ||||| | |||||| |: | ||| |: ||::|  :  : |:| |:            | |
Db   2697 GCCACGAAGGACAACGUUAAAACCGUUGAUUCUUUCAUGAUGAAUUUUGGGAAAAGCACA 2756

Qy   2211 CCGCGATCACACAAGAGGCTTTTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTT 2270
          |   |      ||||||| : :: |::||:||||||::||:| :||| || ||::|:|::
Db   2757 CGCUGUCAGUUCAAGAGGUUAUUCAUUGAUGAAGGGUUGAUGUUGCAUACUGGUUGUGUU 2816

Qy   2271 AACTTCCTGGTGCTTATCTCTGGTTGCGACATCGCATACATTTACGGAGATACACAGCAG 2330
          || :: |: |:|      :|    :|||| |: |||:|  :::||||||| |||||||||
Db   2817 AAUUUUCUUGUGGCGAUGUCAUUGUGCGAAAUUGCAUAUGUUUACGGAGACACACAGCAG 2876

Qy   2331 ATTCCTTTCATTAACAGAGTTCAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAA 2390
          |::|| : ||: || ||||::      ::||||:| |||     ::::|  ||  :| ||
Db   2877 AUUCCAUACAUCAAUAGAGUUUCAGGAUUCCCGUACCCCGCCCAUUUUGCCAAAUUGGAA 2936

Qy   2391 GTGGATGAAGTTGAGATGAGGAGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTC 2450
          |: || || |: ||||   | || || || |:  | :| ||||  ||:|: |    ::
Db   2937 GUUGACGAGGUGGAGACACGCAGAACUACUCUCCGUUGUCCAGCCGAUGUCACACAUUAU 2996

Qy   2451 CTACAATCGAAGTACGAAGGAGCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCA 2510
          |:  |   ||  :| || ||    |: |  | |||::|  | |:  ||   :| |: :|
Db   2997 CUGAACAGGAGAUAUGAGGGCUUUGUCAUGAGCACUUCUUCGGUUAAAAAGUCUGUUUCG 3056

Qy   2511 TCTGAGATGATAGGCGGTAAGGGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGGAAA 2570
             ||||:| : |||||    |  |:  : ||     : :| |||||  :  | || ||
Db   3057 CAGGAGAUGGUCGGCGGAGCCGCCGUGAUCAAUCCGAUCUCAAAACCCUUGCAUGGCAAG 3116

Qy   2571 ATTGTAACTTTCACTCAGGCTGATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTG 2630
          |:  : ||::: || ||  | ||:|||   |   :         |  || :|:    |:|:
Db   3117 AUCCUGACUUUUACCCAAUCGGAUAAAGAAGCUCUGCUUUCAAGAGGGUAUUCAGAUGUU 3176

Qy   2631 AACACCGTTCATGAGATCCAAGGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACG 2690
           |||| |: ||:||  : ||||| |||   :     ||:|: :| |: |: || :: ||
Db   3177 CACACUGUGCAUGAAGUGCAAGGCGAGACAUACUCUGAUGUUUCACUAGUUAGGUUAACC 3236
```

```
Qy   2691 GCAACTCCACTGACTCTGATTTCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGA 2750
           | || ||| :  |  : |:: |         ||| ||:|:: : |:|||  :| | ||
Db   3237 CCUACACCAGUCUCCAUCAUUGCAGGAGACAGCCCACAUGUUUUGGUCGCAUUGUCAAGG 3296

Qy   2751 CACACAAAGAGCTTCAAATATTACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGT 2810
          |||||        :||| :| :|||| |: |:  : ||:||:::||:    |: |::||
Db   3297 CACACCUGUUCGCUCAAGUACUACACUGUUGUUAUGGAUCCUUUAGUUAGUAUCAUUAGA 3356

Qy   2811 GATTTGTCTTCTTTAAGCTCCTTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGA 2870
          ||: :        :||||:| : | : ::||| |:|:|:| ||: || ||||| |    |
Db   3357 GAUCUAGAGAAACUUAGCUCGUACUUGUUAGAUAUGUAUAAGGUCGAUGCAGGAACACAA 3416

Qy   2871 TAGCAATTACAGATGGATGCAGTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAA 2930
          :|||||::|||||: ||  | |:|::||||||:   ||:|: :::|: ||| | || ||
Db   3417 UAGCAAUUACAGAUUGACUCGGUGUUCAAAGGUUCCAAUCUUUUUGUUGCAGCGCCAAAG 3476

Qy   2931 TCAGGAGACTTTCCAGATCTACAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACT 2990
           | || ||  :: | ||: : |||:: :| :| ||:   :| |:||| || || || ||
Db   3477 ACUGGUGAUAUUUCUGAUAUGCAGUUUUACUAUGAUAAGUGUCUCCCAGGCAACAGCACC 3536

Qy   2991 ATACTTAACAAGTATGATGCTGTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAG 3050
          |:  : || || : :||:||:|::||||:||||::   :|| | :    : ||:|: ||
Db   3537 AUGAUGAAUAAUUUUGAUGCUGUUACCAUGAGGUUGACUGACAUUUCAUUGAAUGUCAAA 3596

Qy   3051 GATTGTGTTCTTGATTTTTCCAAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTA 3110
          ||::|  :  : ||: : :| ||   : :: |   ||| |||||    |    |   |:|
Db   3597 GAUUGCAUAUUGGAUAUGUCUAAGUCUGUUGCUGCGCCUAAGGAUCAAAUCAAACCACUA 3656

Qy   3111 GAGCCAGTTTTGCGTACCGCGGCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTG 3170
             ||  :  : || || ||||| |||  |||| |     | ||||:| : |||||: :
Db   3657 AUACCUAUGGUACGAACGGCGGCAGAAAUGCCACGCCAGACUGGACUAUUGGAAAAUUUA 3716

Qy   3171 GTTGCAATGATTAAAAGAAATTTCAACGCACCAGACCTGACGGGGACGATTGACATTGAG 3230
          |: || |:||::||||| || :: |||||||| ||  :| | || |  |::|| |::||
Db   3717 GUGGCGAUGAUUAAAAGGAACUUUAACGCACCCGAGUUGUCUGGCAUCAUUGAUAUUGAA 3776

Qy   3231 AGCACCGCATCTGTTGTAGTAGATAAGTTTTTTGATAGCTATTTTATTAAAAAAGAAAAA 3290
          |  || |||:|: : |: |:|||:|||::::::||:|| :|:::  ::||| || ||| |
Db   3777 AAUACUGCAUCUUUAGUUGUAGAUAAGUUUUUUGAUAGUUAUUUGCUUAAAGAAAAAAGA 3836

Qy   3291 TACACAAAAAATATTGCTGGAGTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAAC 3350
           |  |||| || | :| :   :| : |  |  || :|  : |  |||:||:: |||||
Db   3837 AAACCAAAUAAAAAUGUUUCUUUGUUCAGUAGAGAGUCUCUCAAUAGAUGGUUAGAAAAG 3896

Qy   3351 AGGAAAGAAGTACTATTGGACGACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATC 3410
            | |  | |:|  | : | | |  : ||  | :   |::::  |||: :||| ||  :
Db   3897 CAGGAACAGGUAACAAUAGGCCAGCUCGCAGAUUUUGAUUUUGUAGAUUUGCCAGCAGUU 3956

Qy   3411 GATCAGTACAAGCACATGATCAAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAG 3470
          ||:|||:|||  ||||:||: || || |||||| || || |||::||||  ::|||: ||
Db   3957 GAUCAGUACAGACACAUGAUUAAAGCACAACCCAAGCAAAAAUUGGACACUUCAAUCCAA 4016

Qy   3471 AATGAATACCCTGCTCTGCAAACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTG 3530
          |  || :||||| ||: :||| || |::|: :||||::| ||  |||:||| |  |: ::
Db   4017 ACGGAGUACCCGGCUUUGCAGACGAUUGUGUACCAUUCAAAAAAGAUCAAUGCAAUAUUU 4076

Qy   3531 GCCGGTTTCT---CAGAGCTTACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTT 3587
          | |   :: :     ||||::|| |||    : |: ||     ::||::| |  |  :::
Db   4077 GGCCCGUUGUUUAGUGAGCUUACUAGGCAAUUACUGGACAGUGUUGAUUCGAGCAGAUUU 4136

Qy   3588 CTTTTCTTTACTAGGAAAACTCCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCG 3647
           : :: :: || || || || ||||  ||||:: | || :: ::|   ||:|:||||
Db   4137 UUGUUUUUCACAAGAAAGACACCAGCGCAGAUUGAGGAUUUCUUCGGAGAUCUCGACAGU 4196

Qy   3648 CACGTTCCTATGGATGTGTTAGAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAG 3707
          || |: || |:|||:|: :: || |:|||:|: :| || :| || || :| ||||| ||
Db   4197 CAUGUGCCGAUGGAUGUCUUGGAGCUGGAUAUAUCAAAAUACGACAAAUCUCAGAAUGAA 4256

Qy   3708 TTTCATTGTGCTGTAGAGTATGAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCC 3767
          :: || :|:|| |:||| :| || |: :||  ||||::|||: :  | || :: ::||
Db   4257 UUCCACUGUGCAGUAGAAUACGAGAUCUGGCGAAGAUUGGGUUUUGAAGACUUCUUGGGA 4316
```

```
Qy    3768 GAAGTGTGGAAACAAGGGCACAGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAG 3827
           ||||: :||||||||||||| || || || ||  : |||||::| |  || || |: ||
Db    4317 GAAGUUUGGAAACAAGGGCAUAGAAAGACCACCCUCAAGGAUUAUACCGCAGGUAUAAAA 4376

Qy    3828 ACATGTCTGTGGTATCAAAGGAAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTT 3887
           || :|  : :||:|:||||| || ||||| || |: || || ::||: || || ||:|:
Db    4377 ACUUGCAUCUGGUAUCAAAGAAAGAGCGGGGACGUCACGACGUUCAUUGGAAACACUGUG 4436

Qy    3888 ATAATAGCAGCTTGCTTGGGTTCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTT 3947
           |: |: || || :| ::||  :| |:| : ||||:||| ||  : |: ||||| || :::
Db    4437 AUCAUUGCUGCAUGUUUGGCCUCGAUGCUUCCGAUGGAGAAAAUAAUCAAAGGAGCCUUU 4496

Qy    3948 TGTGGAGACGATTCCGTTTTGTATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCA 4007
           :| || |||||:    :  :|:| :::||||||||::  || :: || ||  : ||
Db    4497 UGCGGUGACGAUAGUCUGCUGUACUUUCCAAAGGGUUGUGAGUUUCCGGAUGUGCAACAC 4556

Qy    4008 TGTGCTAATCTCATGTGGAATTTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTT 4067
           :  || ||:|: |:|:||||::::|| || ||||:|: :| |||   |:| || :||:::
Db    4557 UCCGCGAAUCUUAUGUGGAAUUUUGAAGCAAAACUGUUUAAAAAACAGUAUGGAUACUUU 4616

Qy    4068 TGTGGTAGATACATCATACACCATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAG 4127
           :| || |||:|  : |:||| || || |  |||   |: |:|:|::| ||:||  : |||
Db    4617 UGCGGAAGAUAUGUAAUACAUCACGACAGAGGAUGCAUUGUGUAUUACGAUCCCCUAAAG 4676

Qy    4128 TTGATCTCCAAACTTGGGGCAAAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGG 4187
           ::||:|:| ||||::|| || ||||| |:||||||::  || |||:: || |||:: ||
Db    4677 UUGAUCUCGAAACUUGGUGCUAAACACAUCAAGGAUUGGGAACACUUGGAGGAGUUCAGA 4736

Qy    4188 GTGTCTTTGTGCGATGTTGCTTGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTG 4247
             |:|: : :| ||:|::||:  ::|| :    |||   :|       :   | ||| :|
Db    4737 AGGUCUCUUUGUGAUGUUGCUGUUUCGUU---GAACAAUUGUGCGUAUUACACACAGUUG 4793

Qy    4248 AACGCAGCTATCAAGGAGGTTCATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGT 4307
            |||  ||: : | |||||::||:|| |||||   :   ||::||:::| :: :||  |:
Db    4794 GACGACGCUGUAUGGGAGGUUCAUAAGACCGCCCCUCCAGGUUCGUUUGUUUAUAAAAGU 4853

Qy    4308 GTTAACAAATTTTTGTGTGATAAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAG 4367
            :    || : :::|: :||:||| :: : :::|||| :::|::: :| |:|||: :
Db    4854 CUGGUGAAGUAUUUGUCUGAUAAAGUUCUUUUUAGAAGUUUGUUUAUAGAUGGCUCUAGU 4913

Qy    4368 TCTCAGAGATACTGTCAAAATTAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACT 4427
           : : | ||  |  |: || |: |  |||:: |: || |:  | |||  |||  |||:  :
Db    4914 UGUUAAAGGAAAAGUGAAUAUCAAUGAGUUUAUCGACCUGACAAAAAUGGAGAAGAUCUU 4973

Qy    4428 TCCGGCATTCATGACTAAGGTCAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGC 4487
            ||| |  :  : ||    |: |||||:|::|     :| |  |: || || |: |:||
Db    4974 ACCGUCGAUGUUUACCCCUGUAAAGAGUGUUAUGUGUUCCAAAGUUGAUAAAAUAAUGGU 5033

Qy    4488 TGTTAAGAATGATAGTCTTTCTGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAA 4547
           :  : ||||:||     : :| || |:  |  : |::||||| |::||| :  :: | |
Db    5034 UCAUGAGAAUGAGUCAUUGUCAGAGGUGAACCUUCUUAAAGGAGUUAAGCUUAUUGAUAG 5093

Qy    4548 AGGGTATGTGTGCTTAGCTGATTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTG 4607
            || :| |: :| ::||| | :::||: |:  | || |||:||||  : || || || :|
Db    5094 UGGAUACGUCUGUUUAGCCGGUUUGGUCGUCACGGGCGAGUGGAACUUGCCUGACAAUUG 5153

Qy    4608 CCGTGGTGGTGTCAGTGTTTGTATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAAC 4667
           | | || ||:|: |  |: :|: : |: || || || |:| ||||     | || || ||
Db    5154 CAGAGGAGGUGUGAGCGUGUGUCUGGUGGACAAAAGGAUGGAAAGAGCCGACGAGGCCAC 5213

Qy    4668 GCTGGGTGCGTATCACGCCCCTGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAA 4727
            |: ||  | :|  || |  | ||:   || || |  :::   :: ||| :  : || ||
Db    5214 UCUCGGAUCUUACUACACAGCAGCUGCAAAGAAAAGAUUUCAGUUCAAGGUCGUUCCCAA 5273

Qy    4728 TTATTCAATAACATCCGAGGATGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAA 4787
           ::|: | |:|||  || |||| ||   |||  ||   :||||||: ::||: ||:|: |
Db    5274 UUAUGCUAUAACCACCCAGGACGCGAUGAAAAACGUCUGGCAAGUUUUAGUUAAUAUUAG 5333

Qy    4788 AGGAGTGGCTATGGAAGAAGGATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGT 4847
           |   |:|   |:|  ||  || : |:|:||  : :|: :||||:: |: :|  : :|: :
Db    5334 AAAUGUGAAGAUGUCAGCGGGUUUCUGUCCGCUUUCUCUGGAGUUUGUGUCGGUGUGUAU 5393

Qy    4848 AGTACATAAAAATAATGTAAGAAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGG 4907
```

```
            |:  |:| |||:||: :|| |  |||:::||| ||    |::   |  |:|| ||||||
Db    5394 UGUUUAUAGAAAUAAUAUAAAAUUAGGUUUGAGAGAGAAGAUUACAAACGUGAGAGACGG 5453

Qy    4908 CTCGCCAATTGAACTCACTGAAAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGC 4967
              ||| |: ||||: || ||| | |: |::|| |||::| :||| || |: || |:| |
Db    5454 AGGGCCCAUGGAACUUACAGAAGAAGUCGUUGAUGAGUUCAUGGAAGAUGUCCCUAUGUC 5513

Qy    4968 TGTGA 4972
             : |
Db    5514 GAUCA 5518


RESULT 10
US-10-828-029-5
; Sequence 5, Application US/10828029
; Publication No. US20040171813A1
;  GENERAL INFORMATION:
;       APPLICANT: GARGER, STEPHEN
;                  HOLTZ, R. BARRY
;                  McCULLOCH, MICHAEL
;                  TURPEN, THOMAS
;       TITLE OF INVENTION: A PROCESS FOR ISOLATING AND
;                           PURIFYING VIRUSES SOLUBLE PROTEINS AND PEPTIDES
;                           FROM PLANT SOURCES
;       NUMBER OF SEQUENCES: 5
;       CORRESPONDENCE ADDRESS:
;          ADDRESSEE: Howrey & Simon
;          STREET: 1299 Pennsylvania Avenue N.W.
;          CITY: Washington
;          STATE: DC
;          COUNTRY: USA
;          ZIP: 20004
;       COMPUTER READABLE FORM:
;          MEDIUM TYPE: Diskette
;          COMPUTER: IBM Compatible
;          OPERATING SYSTEM: DOS
;          SOFTWARE: FastSEQ for Windows Version 2.0
;       CURRENT APPLICATION DATA:
;          APPLICATION NUMBER: US/10/828,029
;          FILING DATE: 20-Apr-2004
;          CLASSIFICATION: <Unknown>
;       PRIOR APPLICATION DATA:
;          APPLICATION NUMBER: US/09/962,527
;          FILING DATE: 24-Sep-2001
;          APPLICATION NUMBER: 09/037,751
;          FILING DATE: 10-march-1998
;       ATTORNEY/AGENT INFORMATION:
;          NAME: Halluin, Albert P
;          REGISTRATION NUMBER: 25,277
;          REFERENCE/DOCKET NUMBER: 00801.0140.999
;       TELECOMMUNICATION INFORMATION:
;          TELEPHONE: 650-463-8109
;          TELEFAX: 650-463-8400
;          TELEX: <Unknown>
;  INFORMATION FOR SEQ ID NO: 5:
;       SEQUENCE CHARACTERISTICS:
;          LENGTH: 6446 base pairs
;          TYPE: nucleic acid
;          STRANDEDNESS: single
;          TOPOLOGY: unknown
;       MOLECULE TYPE: Genomic RNA
;       SEQUENCE DESCRIPTION: SEQ ID NO: 5:
US-10-828-029-5

  Query Match             40.8%;  Score 2031;  DB 19;  Length 6446;
  Best Local Similarity   44.4%;  Pred. No. 0;
  Matches 2212;  Conservative  957;  Mismatches 1795;  Indels   21;  Gaps    4;

Qy       6 AAGGTAATTCCTGAGTTTCAAAGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAA 65
           ||   | : ||  | :: |||| ||| || ::: |||| :| ||||||  :||  | ||
Db     537 AAAACAGUCCCCAACUUCCAAAAGGAAGCAUUUGACAGAUACGCAGAAAUUCCUGAAGAC 596

Qy      66 GTCTGCTGCTCTAAAACTTTTCAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGA 125
```

```
              |    |:|    || ||:::|||      |||   || |||    || |    || |||
Db       597 GCUGUCUGUCACAAUACUUUCCAGACAAUGCGACAUCAGCCGAUGCAGCAAUCAGGCAGA 656

Qy       126 AGATACGCTGTTGCTCTGCACAGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCG 185
                 :| ||  ::|| |: |||||  : :|:|| |: || |   |:|||:: || || ||
Db       657 GUGUAUGCCAUUGCGCUACACAGCAUAUAUGACAUACCAGCCGAUGAGUUCGGGGCGGCA 716

Qy       186 TTAATATCTAAGAATATACATGTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTA 245
               :  :    || ||: : ||:   : |:|:|| ||:: |   ::  | ||     :  :
Db       717 CUCUUGAGGAAAAAUGUCCAUACGUGCUAUGCCGCUUUCCACUUCUCUGAGAACCUGCUU 776

Qy       246 CTAGACCAGACGGAGGTTACGCTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGAT 305
              |: ||  |  |  | |: |   :  | ||||:   |||   :::     | || || ||
Db       777 CUUGAAGAUUCAUACGUCAAUUUGGACGAAAUCAACGCGUGUUUUUCGCGCGAUGGAGAC 836

Qy       306 GATGTTTCTTTTTTCTTTGCTGATGAAAGTACTTTAAATTATAGTCATAAATACAAAAAT 365
               |  :  | ::::  :::||    || ||:||: : ||::|: |:||:|  :|    ||:
Db       837 AAGUUGACCUUUUCUUUUGCAUCAGAGAGUACUCUUAAUUAUUGUCAUAGUUAUUCUAAU 896

Qy       366 ATCTTGCATTATGTAGTTAAATCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAG 425
              |:  :  | :|:|:    ||| |::||:: || || :|:| :|||   |:::|| : |||
Db       897 AUUCUUAAGUAUGUGUGCAAAACUUACUUCCCGGCCUCUAAUAGAGAGGUUUACAUGAAG 956

Qy       426 GAATTTTTAGTCACTAGGGTTAATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTAT 485
              || :::::||:||| || |::||:|| :||::::|:|| ::: | | | :||:||  : :
Db       957 GAGUUUUUAGUCACCAGAGUUAAUACCUGGUUUUGUAAGUUUUCUAGAAUAGAUACUUUU 1016

Qy       486 ATTCTGTACAAGAGTGTTAGACAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATG 545
               :: :|:||||  |:|:    ||   | |    ||:||:|| ||::  :|:   || |:|
Db      1017 CUUUUGUACAAAGGUGUGGCCCAUAAAAGUGUAGAUAGUGAGCAGUUUUAUACUGCAAUG 1076

Qy       546 GAAGACGCCTTTGCTTACAAGAAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTT 605
              |||||||| :    ::|||| || ||  : || |:|: |||||  || |||    :| ::
Db      1077 GAAGACGCAUGGCAUUACAAAAAGACUCUUGCAAUGUGCAACAGCGAGAGAAUCCUCCUU 1136

Qy       606 AGAGACACGGCTTCGGTTAACTTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCG 665
                 ||  |  | :| |: || :  :||:: || || |:|| ||| |:|: |:  |:|||
Db      1137 GAGGAUUCAUCAUCAGUCAAUUACUGGUUUCCCAAAAUGAGGGAUAUGGUCAUCGUACCA 1196

Qy       666 CTGTTTGAGGGTTCTATTACCAGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGT 725
               : :: ||   ::|: :    |  |  |||| |||  | |  || |:| : |:
Db      1197 UUAUUCGACAUUUCUUUGGAGACUAGUAAGAGGACGCGCAAGGAAGUCUUAGUGUCCAAG 1256

Qy       726 GACTTCGTTTACACAGTGCTTAATCATATCAGAACATATCAAGCCAAAGCGTTAACTTAC 785
              || ::||: :  ||||:||::|| || |:  |||||:| || || |||||  : || :||
Db      1257 GAUUUCGUGUUUACAGUGCUUAACCACAUUCGAACAUACCAGGCGAAAGCUCUUACAUAC 1316

Qy       786 CAGAACGTATTATCTTTCGTGGAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACT 845
                 || |: :: :| :: |: || :| |:  ||:|  || : |: |: || ||:|: ||
Db      1317 GCAAAUGUUUUGUCCUUUGUCGAAUCGAUUCGAUCGAGGGUAAUCAUUAACGGUGUGACA 1376

Qy       846 GCTAGGTCTGAATGGGATGTAGATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTC 905
              || |||:| |||:||||:|:| || ||| |  :  : ||| ||::|:| |:||| :: : |
Db      1377 GCGAGGUCCGAAUGGGAUGUGGACAAAUCUUUGUUACAAUCCUUGUCCAUGACGUUUUAC 1436

Qy       906 TTGCAGACTAAGCTGGCTGCGCTTCAAGACGATATAGTAATGGGAAAGTTTCGGTGCTTG 965
               :||| ||:||||: || |  |:  | || ||  :| : |:  | |||::: |   |
Db      1437 CUGCAUACUAAGCUUGCCGUUCUAAAGGAUGACUUACUGAUUAGCAAGUUUAGUCUCGGU 1496

Qy       966 GATAAGACCACTTCTGAACTTATTTGGATGAGGTGGCAAATTTTTTGGAAACGTTTTC 1025
                 || ||    :   | | : : :||||:||| :          :::|| ||||  ::
Db      1497 UCGAAAACGGUGUGCCAGCAUGUGUGGAUGAGAUUUCGCUGGCGUUUGGAACGCAUUU 1556

Qy      1026 CCCACTATCAAAGAGAGATTGGTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTG 1085
             ||| |  : ||||||||  :  :|| ||||||| :: :    |:    |   | ||  :
Db      1557 CCCUCCGUGAAAGAGAGGCUCUUGAACAGGAAACUUAUCAGAGUGGCAGGCGACGCAUUA 1616

Qy      1086 AAGATCAAGATCCCAGATCTGTATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACC 1145
              |||:|| | : || ||:|: :|:|: || :   | ||||| :: |:  |:|| :|||
Db      1617 GAGAUCAGGGUGCCUGAUCUAUAUGUGACCUUCCACGACAGAUUAGUGACUGAGUACAAG 1676

Qy      1146 AAGTCTGAGGAGTTACCGCATCTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATG 1205
                :|:| ||| :  ||    |: || |: | |||| |  : |||||| | ||    |:|

Db      1677 GCCUCUGUGGACAUGCCUGCGCUUGACAUUAGGAAGAAGAUGGAAGAAACGGAAGUGAUG 1736

Qy      1206 TACGACGCGTTATCAGAATTATCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAG 1265
             :|| | ||  : :|||| ::|:|  :  : | ||   |:|| || ::|||: : |
Db      1737 UACAAUGCACUUUCAGAGUUAUCGGUGUUAAGGGAGUCUGACAAAUUCGAUGUUGAUGUU 1796

Qy      1266 TTCAAAGACATGTGCAAGGCTTTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTT 1325
             ::     | |:|:|| |  |::: || |::   ||      ||||||    |: |: |:
Db      1797 UUUUCCCAGAUGUGCCAAUCUUUGGAAGUUGACCCAAUGACGGCAGCGAAGGUUAUAGUC 1856

Qy      1326 GCAGTGGCCGAGAATAGAAGCGGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAAT 1385
             || |:       ||:   |||||: : ||:|: || :::||    || || |||| |||:
Db      1857 GCGGUCAUGAGCAAUGAGAGCGGUCUGACUCUCACAUUUGAACGACCUACUGAGGCGAAU 1916

Qy      1386 GTGGCTAAGGCTCT------TAAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCG 1439
             |: ||    ||: :      : ||   | ||| :| || |  |   :     ::    |
Db      1917 GUUGCGCUAGCUUUACAGGAUCAAGAGAAGGCUUCAGAAGGUGCUUUGGUAGUUACCUCA 1976

Qy      1440 ACATCCGAAGAGGTGAACGTAAATAAATTTTCTATTGCTGAGAAAGGAGATTGCCTGTG 1499
             | |   |  || |        |  ||   ::| |: ||      || |  |      |
Db      1977 AGAGAAGUUGAAGAACCGUCCAUGAAGGGUUCGAUGGCCAGAGGAGAGUUACAAUUAGCU 2036

Qy      1500 TGTGCAGAAAGTCATGGTTTGACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTC 1559
              |:   |   |  |:  :  |  |    |  | :   || || ||||| : |||:|  :
Db      2037 GGUCUUGCUGGAGAUCAUCCGGAGUCGUCCUAUUCUAAGAACGAGGAGAUAGAGUCUUUA 2096

Qy      1560 AACGATTTCCATAAGGCTTGCGTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTC 1619
              |  | :: ||:| |||    |  ||:    : |::   ||||| |:|   :||::|:
Db      2097 GAGCAGUUUCAUAUGGCAACGGCAGAUUCGUUAAUUCGUAAGCAGAUGAGCUCGAUUGUG 2156

Qy      1620 TACACTGGCTCACTCAAAGTTCAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCG 1679
             :|||| ||  |  : ||||::|| ||||:||| |||: : : || ||  :|| ||| :|
Db      2157 UACACGGGUCCGAUUAAAGUUCAGCAAAUGAAAAACUUUAUCGAUAGCCUGGUAGCAUCA 2216

Qy      1680 TTGTCCGCCACTGTATCAAATCTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCT 1739
              : :| ||  || : :| ||:|:   ||||   |: || |:   ||  |    :||   :
Db      2217 CUAUCUGCUGCGGUGUCGAAUCUCGUCAAGAUCCUCAAAGAUACAGCUGCUAUUGACCUU 2276

Qy      1740 GATTCCAGGGAGAAAGTTGGTGTTTGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCT 1799
             ||  |||   | ||  ::|| |: : |||:|:  | :  |  |||:|| :  :||||||
Db      2277 GAAACCCGUCAAAAGUUUGGAGUCUUGGAUGUUGCAUCUAGGAAGUGGUUAAUCAAACCA 2336

Qy      1800 GCGGCCAAAGGTCATTCATGGGGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCA 1859
              |||||||  |:||: ||:|||| |::|:        ||  | ||||      :   ||
Db      2337 ACGGCCAAGAGUCAUGCAUGGGGUGUUGUUGAAACCCACGCGAGGAAGUAUCAUGUGGCG 2396

Qy      1860 CTTCTATCTTATGAAGGAGATAGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTA 1919
             |:: :    :|:|| |   |  |  :||:|||       || :|||| || |: ||:|:
Db      2397 CUUUUGGAAUAUGAUGAGCAGGGUGUGGUGACAUGCGAUGAUUGGAGAAGAGUAGCUGUC 2456

Qy      1920 TCATCTGATACAATGGTATATTCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATG 1979
                :|:||  |  :|: :|::| || |: || || |:|  || :|:| | | |    :
Db      2457 AGCUCUGAGUCUGUUGUUUAUUCCGACAUGGCGAAACUCAGAACUCUGCGCAGACUGCUU 2516

Qy      1980 AGAGACGGTGAACCCCACGAACCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGT 2039
              || |||| ||||| || |    :|  |||||| : |: |::|:||| || |: || ||
Db      2517 CGAAACGGAGAACCGCAUGUCAGUAGCGCAAAGGUUGUUCUUGUGGACGGAGUUCCGGGC 2576

Qy      2040 TGTGGAAAGTACAAAGGAGATTTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTT 2099
             :|:|| ||   ||||| |  : ::   ||  :: |: ::||:|| ||: : |: :: |:
Db      2577 UGUGGAAAACCAAAGAAAUUCUUUCCAGGGUUAAUUUUGAUGAAGAUCUAAUUUUAGUA 2636

Qy      2100 CCTGGAAAACAAGCTGCTGCTATGATCAGAAGAAGGCTAATTCATCTGGACTGATAAGA 2159
             ||:|| || ||||| || |  |:||:||||||| | || ||::| :| ||  : |:
Db      2637 CCUGGGAAGCAAGCCGCGGAAAUGAUCAGAAGACGUGCGAAUUCCUCAGGGAUUAUUGUG 2696

Qy      2160 GCCACAATGGACAATGTGAGAACGGTAGATTCACTTCTAATGCAT---------CCAAAA 2210
             ||||| | |||||| |: | ||| |: ||::|  :  : |:| |:            | |
Db      2697 GCCACGAAGGACAACGUUAAAACCGUUGAUUCUUUCAUGAUGAAUUUUGGGAAAAGCACA 2756

Qy      2211 CCGCGATCACACAAGAGGCTTTTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTT 2270
             |   |      ||||||| : :: |::||:||||||::||:| :||| || ||::|:|::
Db      2757 CGCUGUCAGUUCAAGAGGUUAUUCAUUGAUGAAGGGUUGAUGUUGCAUACUGGUUGUGUU 2816
```

```
Qy          2271 AACTTCCTGGTGCTTATCTCTGGTTGCGACATCGCATACATTTACGGAGATACACAGCAG 2330
                 || :: |: |:|   |: :|    :|||| |: |||:|  :::||||||| |||||||||
Db          2817 AAUUUUCUUGUGGCGAUGUCAUUGUGCGAAAUUGCAUAUGUUUACGGAGACACACAGCAG 2876

Qy          2331 ATTCCTTTCATTAACAGAGTTCAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAA 2390
                 |::|| : ||: || ||||::      ::||||:| |||   ||::::|  ||  :| ||
Db          2877 AUUCCAUACAUCAAUAGAGUUUCAGGAUUCCCGUACCCCGCCCAUUUUGCCAAAUUGGAA 2936

Qy          2391 GTGGATGAAGTTGAGATGAGGAGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTC 2450
                 |: || || |: ||||   | || || ||:  | :| ||||  ||:|: |    ::
Db          2937 GUUGACGAGGUGGAGACACGCAGAACUACUCUCCGUUGUCCAGCCGAUGUCACACAUUAU 2996

Qy          2451 CTACAATCGAAGTACGAAGGAGCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCA 2510
                 |:  |   ||  :| || ||    |: |  | |||::|  | |:  ||   :| |: :|
Db          2997 CUGAACAGGAGAUAUGAGGGCUUUGUCAUGAGCACUUCUUCGGUUAAAAAGUCUGUUUCG 3056

Qy          2511 TCTGAGATGATAGGCGGTAAGGGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGGAAA 2570
                    ||||:| : |||||    |  |:  : ||     : :| |||||  :  | ||  ||
Db          3057 CAGGAGAUGGUCGGCGGAGCCGCCGUGAUCAAUCCGAUCUCAAAACCCUUGCAUGGCAAG 3116

Qy          2571 ATTGTAACTTTCACTCAGGCTGATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTG 2630
                 |:  : ||::: || ||  | ||:|||   |   :       |  || :|:    |:|:
Db          3117 AUCCUGACUUUUACCCAAUCGGAUAAAGAAGCUCUGCUUUCAAGAGGGUAUUCAGAUGUU 3176

Qy          2631 AACACCGTTCATGAGATCCAAGGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACG 2690
                  |||| |: ||:||  : ||||| || || :     ||:|: :| |: |:  || :: ||
Db          3177 CACACUGUGCAUGAAGUGCAAGGCGAGACAUACUCUGAUGUUUCACUAGUUAGGUUAACC 3236

Qy          2691 GCAACTCCACTGACTCTGATTTCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGA 2750
                  | || ||| :  |  : |:: |         ||| ||:|:: : |:|||  :| | ||
Db          3237 CCUACACCAGUCUCCAUCAUUGCAGGAGACAGCCCACAUGUUUUGGUCGCAUUGUCAAGG 3296

Qy          2751 CACACAAAGAGCTTCAAATATTACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGT 2810
                 |||||        :||| :| :|||| |: |:  : ||:|:::||:    |: |::||
Db          3297 CACACCUGUUCGCUCAAGUACUACACUGUUGUUAUGGAUCCUUUAGUUAGUAUCAUUAGA 3356

Qy          2811 GATTTGTCTTCTTTAAGCTCCTTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGA 2870
                 ||: :        : |||:| : | : ::||| |:|:|:|:| ||: || ||||| |    |
Db          3357 GAUCUAGAGAAACUUAGCUCGUACUUGUUAGAUAUGUAUAAGGUCGAUGCAGGAACACAA 3416

Qy          2871 TAGCAATTACAGATGGATGCAGTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAA 2930
                 :|||||::|||||: ||  | |:|::||||||:   ||:|: :::|: ||| | || ||
Db          3417 UAGCAAUUACAGAUUGACUCGGUGUUCAAAGGUUCCAAUCUUUUUGUUGCAGCGCCAAAG 3476

Qy          2931 TCAGGAGACTTTCCAGATCTACAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACT 2990
                  | || ||  :: | ||: : |||:: :| :| ||:   :| |:||| || || || ||
Db          3477 ACUGGUGAUAUUUCUGAUAUGCAGUUUUACUAUGAUAAGUGUCUCCCAGGCAACAGCACC 3536

Qy          2991 ATACTTAACAAGTATGATGCTGTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAG 3050
                 |:  : || || : :||:||:|::||||:||||::   :|| | :    : ||:|: ||
Db          3537 AUGAUGAAUAAUUUUGAUGCUGUUACCAUGAGGUUGACUGACAUUUCAUUGAAUGUCAAA 3596

Qy          3051 GATTGTGTTCTTGATTTTTCCAAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTA 3110
                 ||::|  :  : ||: : :| ||   : :: |   ||| ||||||    |    |   |:|
Db          3597 GAUUGCAUAUUGGAUAUGUCUAAGUCUGUUGCUGCGCCUAAGGAUCAAAUCAAACCACUA 3656

Qy          3111 GAGCCAGTTTTGCGTACCGCGGCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTG 3170
                    ||  :  : || || ||||| |||  |||| |     | ||||:| : |||||: :
Db          3657 AUACCUAUGGUACGAACGGCGGCAGAAAUGCCACGCCAGACUGGACUAUUGGAAAAUUUA 3716

Qy          3171 GTTGCAATGATTAAAAGAAATTTCAACGCACCAGACCTGACGGGGACGATTGACATTGAG 3230
                 |: || |:||::||||| || :: |||||||| || :  :| | || |  |::|| |::||
Db          3717 GUGGCGAUGAUUAAAAGGAACUUUAACGCACCCGAGUUGUCUGGCAUCAUUGAUAUUGAA 3776

Qy          3231 AGCACCGCATCTGTTGTAGTAGATAAGTTTTTTGATAGCTATTTTATTAAAAAAAGAAAAA 3290
                 |  || |||:|: : |: |:|||:|||::::::||:|| :|:::  ::||| || ||| |
Db          3777 AAUACUGCAUCUUUAGUUGUAGAUAAGUUUUUUGAUAGUUAUUUGCUUAAAGAAAAAAGA 3836

Qy          3291 TACACAAAAAATATTGCTGGAGTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAAC 3350
                  |  |||| || | :| :    :| : |  |  || :|  : |  |||:||:: |||||
Db          3837 AAACCAAAUAAAAAUGUUUCUUUGUUCAGUAGAGAGUCUCUCAAUAGAUGGUUAGAAAAG 3896

Qy          3351 AGGAAAGAAGTACTATTGGACGACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATC 3410
                   | || | |:|  | : | | |  : || | :   |::::  |||: :||| ||  :
Db          3897 CAGGAACAGGUAACAAUAGGCCAGCUCGCAGAUUUUGAUUUUGUAGAUUUGCCAGCAGUU 3956

Qy          3411 GATCAGTACAAGCACATGATCAAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAG 3470
                 ||:|||:|||  ||||:||: || || |||||| || || ||||::||||  ::|||: ||
Db          3957 GAUCAGUACAGACACAUGAUUAAAGCACAACCCAAGCAAAAAUUGGACACUUCAAUCCAA 4016

Qy          3471 AATGAATACCCTGCTCTGCAAACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTG 3530
                 |  || :||||| ||: :||| || |::|: :||||::| ||  |||:||| |  |: ::
Db          4017 ACGGAGUACCCGGCUUUGCAGACGAUUGUGUACCAUUCAAAAAAGAUCAAUGCAAUAUUU 4076

Qy          3531 GCCGGTTTCT---CAGAGCTTACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTT 3587
                 | |   :: :     ||||::|| |||     : |: ||     ::||::| |  |  :::
Db          4077 GGCCCGUUGUUUAGUGAGCUUACUAGGCAAUUACUGGACAGUGUUGAUUCGAGCAGAUUU 4136

Qy          3588 CTTTTCTTTACTAGGAAAACTCCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCG 3647
                  : :: :: || || || || ||||  ||||:: | || :: ::|   ||:|:||||
Db          4137 UUGUUUUUCACAAGAAAGACACCAGCGCAGAUUGAGGAUUUCUUCGGAGAUCUCGACAGU 4196

Qy          3648 CACGTTCCTATGGATGTGTTAGAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAG 3707
                 || |: || |:|||:|: :: || |:|||:|: :| || :| || || :| ||||| ||
Db          4197 CAUGUGCCGAUGGAUGUCUUGGAGCUGGAUAUAUCAAAAUACGACAAAUCUCAGAAUGAA 4256

Qy          3708 TTTCATTGTGCTGTAGAGTATGAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCC 3767
                 :: || :|:|| |:||| :| || |: :||  ||||::|||: :  | || :: ::||
Db          4257 UUCCACUGUGCAGUAGAAUACGAGAUCUGGCGAAGAUUGGGUUUUGAAGACUUCUUGGGA 4316

Qy          3768 GAAGTGTGGAAACAAGGGCACAGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAG 3827
                 ||||: :||||||||||||| || || || ||  : |||||::| |  || || |: ||
Db          4317 GAAGUUUGGAAACAAGGGCAUAGAAAGACCACCCUCAAGGAUUAUACCGCAGGUAUAAAA 4376

Qy          3828 ACATGTCTGTGGTATCAAAGGAAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTT 3887
                 || :|  : :||:|:||||| || ||||| || |: || |  | ::||: || ||:|:
Db          4377 ACUUGCAUCUGGUAUCAAAGAAAGAGCGGGGACGUCACGACGUUCAUUGGAAACACUGUG 4436

Qy          3888 ATAATAGCAGCTTGCTTGGGTTCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTT 3947
                 |: |: || || :| ::||  :| |:| : ||||:||| ||  : |: |||| || :::
Db          4437 AUCAUUGCUGCAUGUUUGGCCUCGAUGCUUCCGAUGGAGAAAAUAAUCAAAGGAGCCUUU 4496

Qy          3948 TGTGGAGACGATTCCGTTTTGTATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCA 4007
                 :| || |||||:    :  :|:| :::|||||||||::  || :: || ||   : ||
Db          4497 UGCGGUGACGAUAGUCUGCUGUACUUUCCAAAGGGUUGUGAGUUUCCGGAUGUGCAACAC 4556

Qy          4008 TGTGCTAATCTCATGTGGAATTTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTT 4067
                 :  || ||:|: |:|:||||::::|| || ||||:|: :| |||   |:| || :||:::
Db          4557 UCCGCGAAUCUUAUGUGGAAUUUUGAAGCAAAACUGUUUAAAAAACAGUAUGGAUACUUU 4616

Qy          4068 TGTGGTAGATACATCATACACCATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAG 4127
                 :| || |||:|  : |:||| || || |   |||   |: |:|:|::| ||:||  : |||
Db          4617 UGCGGAAGAUAUGUAAUACAUCACGACAGAGGAUGCAUUGUGUAUUACGAUCCCCUAAAG 4676

Qy          4128 TTGATCTCCAAACTTGGGGCAAAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGG 4187
                 ::||:|:| ||||::|| || ||||| |:|||||::  || |||::  |||:: ||
Db          4677 UUGAUCUCGAAACUUGGUGCUAAACACAUCAAGGAUUGGGAACACUUGGAGGAGUUCAGA 4736

Qy          4188 GTGTCTTTGTGCGATGTTGCTTGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTG 4247
                   |:|: : :| ||:|::||:  ::|| :    |||   :||       :   | ||| :|
Db          4737 AGGUCUCUUUGUGAUGUUGCUGUUUCGUU---GAACAAUUGUGCGUAUUACACACAGUUG 4793

Qy          4248 AACGCAGCTATCAAGGAGGTTCATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGT 4307
                  |||  ||: :   |||||::||:|| |||||   :   ||::||:::| :: :||  |:
Db          4794 GACGACGCUGUAUGGGAGGUUCAUAAGACCGCCCCUCCAGGUUCGUUUGUUUAUAAAAGU 4853

Qy          4308 GTTAACAAATTTTTGTGTGATAAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAG 4367
                  :    || : :::|: :||:||| :: : :::|||| :::|::: :| |:|||: :
Db          4854 CUGGUGAAGUAUUUGUCUGAUAAAGUUCUUUUUAGAAGUUUGUUUAUAGAUGGCUCUAGU 4913

Qy          4368 TCTCAGAGATACTGTCAAAATTAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACT 4427
                 : : | ||  |  |: || |: |  |||:: |: || |:  | |||  |||  |||:  :
Db          4914 UGUUAAAGGAAAAGUGAAUAUCAAUGAGUUUAUCGACCUGACAAAAAUGGAGAAGAUCUU 4973

Qy          4428 TCCGGCATTCATGACTAAGGTCAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGC 4487
```

```
                ||||   :  : ||    |: ||||:|::|      :| |  |: || || |: |:||
Db        4974 ACCGUCGAUGUUUACCCCUGUAAAGAGUGUUAUGUGUUCCAAAGUUGAUAAAAUAAUGGU 5033

Qy        4488 TGTTAAGAATGATAGTCTTTCTGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAA 4547
               :  : ||||:||     : :| |||:  |   : |::||||| |::||| :  :: | |
Db        5034 UCAUGAGAAUGAGUCAUUGUCAGAGGUGAACCUUCUUAAAGGAGUUAAGCUUAUUGAUAG 5093

Qy        4548 AGGGTATGTGTGCTTAGCTGATTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTG 4607
                || :| |: :| ::||| | :::||: |:  | || |||:||||  : || || || :|
Db        5094 UGGAUACGUCUGUUUAGCCGGUUUGGUCGUCACGGGCGAGUGGAACUUGCCUGACAAUUG 5153

Qy        4608 CCGTGGTGGTGTCAGTGTTTGTATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAAC 4667
               | | || ||:|: || |: :|: : |: || || || |:| ||||     | || || ||
Db        5154 CAGAGGAGGUGUGAGCGUGUGUCUGGUGGACAAAAGGAUGGAAAGAGCCGACGAGGCCAC 5213

Qy        4668 GCTGGGTGCGTATCACGCCCCTGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAA 4727
                |: ||  | :|  || |  ||| :   || || |  :::   :: ||| :  : || ||
Db        5214 UCUCGGAUCUUACUACACAGCAGCUGCAAAGAAAAGAUUUCAGUUCAAGGUCGUUCCCAA 5273

Qy        4728 TTATTCAATAACATCCGAGGATGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAA 4787
               ::|: | |:|||  || |||| ||   |||  ||   :||||||: ::||: ||:|: |
Db        5274 UUAUGCUAUAACCACCCAGGACGCGAUGAAAAACGUCUGGCAAGUUUUAGUUAAUAUUAG 5333

Qy        4788 AGGAGTGGCTATGGAAGAAGGATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGT 4847
               |   |:|   |:|  ||  || : |:|:||  : :|: :||||:: |: :|  : :|: :
Db        5334 AAAUGUGAAGAUGUCAGCGGGUUUCUGUCCGCUUUCUCUGGAGUUUGUGUCGGUGUGUAU 5393

Qy        4848 AGTACATAAAAATAATGTAAGAAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGG 4907
                |:  |:| |||:||: :|| |  |||:::||| ||    |::   |  |:|| ||||||
Db        5394 UGUUUAUAGAAAUAAUAUAAAAUUAGGUUUGAGAGAGAAGAUUACAAACGUGAGAGACGG 5453

Qy        4908 CTCGCCAATTGAACTCACTGAAAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGC 4967
                  ||| |: ||||: || ||| | |: |::|| |||::| :||| || |: || |:| |
Db        5454 AGGGCCCAUGGAACUUACAGAAGAAGUCGUUGAUGAGUUCAUGGAAGAUGUCCCUAUGUC 5513

Qy        4968 TGTGA 4972
                 : |
Db        5514 GAUCA 5518


RESULT 11
US-09-962-527-4
; Sequence 4, Application US/09962527
; Publication No. US20030049813A1
;   GENERAL INFORMATION:
;         APPLICANT: GARGER, STEPHEN
;                    HOLTZ, R. BARRY
;                    McCULLOCH, MICHAEL
;                    TURPEN, THOMAS
;         TITLE OF INVENTION: A PROCESS FOR ISOLATING AND
;                             PURIFYING VIRUSES SOLUBLE PROTEINS AND PEPTIDES
;                             FROM PLANT SOURCES
;         NUMBER OF SEQUENCES: 5
;         CORRESPONDENCE ADDRESS:
;              ADDRESSEE: Howrey & Simon
;              STREET: 1299 Pennsylvania Avenue N.W.
;              CITY: Washington
;              STATE: DC
;              COUNTRY: USA
;              ZIP: 20004
;         COMPUTER READABLE FORM:
;              MEDIUM TYPE: Diskette
;              COMPUTER: IBM Compatible
;              OPERATING SYSTEM: DOS
;              SOFTWARE: FastSEQ for Windows Version 2.0
;         CURRENT APPLICATION DATA:
;              APPLICATION NUMBER: US/09/962,527
;              FILING DATE: 24-Sep-2001
;              CLASSIFICATION: <Unknown>
;         PRIOR APPLICATION DATA:
;              APPLICATION NUMBER: 09/037,751
;              FILING DATE: 10-march-1998
;         ATTORNEY/AGENT INFORMATION:
```

```
;              NAME: Halluin, Albert P
;              REGISTRATION NUMBER: 25,277
;              REFERENCE/DOCKET NUMBER: 00801.0140.999
;         TELECOMMUNICATION INFORMATION:
;              TELEPHONE: 650-463-8109
;              TELEFAX: 650-463-8400
;              TELEX: <Unknown>
;    INFORMATION FOR SEQ ID NO: 4:
;         SEQUENCE CHARACTERISTICS:
;              LENGTH: 6475 base pairs
;              TYPE: nucleic acid
;              STRANDEDNESS: single
;              TOPOLOGY: unknown
;         MOLECULE TYPE: Genomic RNA
;         SEQUENCE DESCRIPTION: SEQ ID NO: 4:
US-09-962-527-4

  Query Match             40.8%;  Score 2031;  DB 10;  Length 6475;
  Best Local Similarity   44.4%;  Pred. No. 0;
  Matches 2212;  Conservative  957;  Mismatches 1795;  Indels   21;  Gaps    4;

Qy           6 AAGGTAATTCCTGAGTTTCAAAGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAA 65
               ||   | : ||  | :: |||| ||| || ::: |||| :| ||||||  :||  | ||
Db         537 AAAACAGUCCCCAACUUCCAAAAGGAAGCAUUUGACAGAUACGCAGAAAUUCCUGAAGAC 596

Qy          66 GTCTGCTGCTCTAAAACTTTTCAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGA 125
               |    |:|    || ||::: |||      |||   || |||    || |    || |||
Db         597 GCUGUCUGUCACAAUACUUUCCAGACAAUGCGACAUCAGCCGAUGCAGCAAUCAGGCAGA 656

Qy         126 AGATACGCTGTTGCTCTGCACAGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCG 185
                  :| ||  ::|| |: |||||  : :|:|| |: || |   |:|||:: || || ||
Db         657 GUGUAUGCCAUUGCGCUACACAGCAUAUAUGACAUACCAGCCGAUGAGUUCGGGGCGGCA 716

Qy         186 TTAATATCTAAGAATATACATGTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTA 245
                :  :    || ||: : ||:   :| :|:|| ||:: |   ::  | ||     :  :
Db         717 CUCUUGAGGAAAAAUGUCCAUACGUGCUAUGCCGCUUUCCACUUCUCUGAGAACCUGCUU 776

Qy         246 CTAGACCAGACGGAGGTTACGCTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGAT 305
               |: ||  |  |  | |: |   :  | ||||:   |||   :::     | || || ||
Db         777 CUUGAAGAUUCAUACGUCAAUUUGGACGAAAUCAACGCGUGUUUUUCGCGCGAUGGAGAC 836

Qy         306 GATGTTTCTTTTTTCTTTGCTGATGAAAGTACTTTAAATTATAGTCATAAATACAAAAAT 365
                |  :  | ::::  :::||    || ||:||: :||::|: |:||:|  :|     ||:
Db         837 AAGUUGACCUUUUCUUUUGCAUCAGAGAGUACUCUUAAUUAUUGUCAUAGUUAUUCUAAU 896

Qy         366 ATCTTGCATTATGTAGTTAAATCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAG 425
               |:  :  | :|:|:    ||| |::||:: || || :|:| :|||   |:::|| : |||
Db         897 AUUCUUAAGUAUGUGUGCAAAACUUACUUCCCGGCCUCUAAUAGAGAGGUUUACAUGAAG 956

Qy         426 GAATTTTTAGTCACTAGGGTTAATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTAT 485
               || :::::||:||| || |::||:|| :||::::|:|| ::: | | | :|||:|| : :
Db         957 GAGUUUUUAGUCACCAGAGUUAAUACCUGGUUUUGUAAGUUUUCUAGAAUAGAUACUUUU 1016

Qy         486 ATTCTGTACAAGAGTGTTAGACAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATG 545
                :: :|:||||  |:|:    ||   | |    ||:||:|| |||:: :|:   || |:|
Db        1017 CUUUUGUACAAAGGUGUGGCCCAUAAAAGUGUAGAUAGUGAGCAGUUUUAUACUGCAAUG 1076

Qy         546 GAAGACGCCTTTGCTTACAAGAAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTT 605
               |||||||| :    ::|||| || ||  : || |:|: |||||  || |||    :| ::
Db        1077 GAAGACGCAUGGCAUUACAAAAAGACUCUUGCAAUGUGCAACAGCGAGAGAAUCCUCCUU 1136

Qy         606 AGAGACACGGCTTCGGTTAACTTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCG 665
                  ||  |  | :| |: || :  :||:: || || |:|| ||| |:||: |: |:|||
Db        1137 GAGGAUUCAUCAUCAGUCAAUUACUGGUUUCCCAAAAUGAGGGAUAUGGUCAUCGUACCA 1196

Qy         666 CTGTTTGAGGGTTCTATTACCAGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGT 725
                : :: ||   ::|: :    |  |  |||| |||  | |  || |:| : |:
Db        1197 UUAUUCGACAUUUCUUUGGAGACUAGUAAGAGGACGCGCAAGGAAGUCUUAGUGUCCAAG 1256

Qy         726 GACTTCGTTTACACAGTGCTTAATCATATCAGAACATATCAAGCCAAAGCGTTAACTTAC 785
               || ::||: :  ||||:||::|| || |:  ||||:| || ||  |||||  : || :||
Db        1257 GAUUUCGUGUUUACAGUGCUUAACCACAUUCGAACAUACCAGGCGAAAGCUCUUACAUAC 1316
```

```
Qy          786 CAGAACGTATTATCTTTCGTGGAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACT 845
                   || |: :: :| :: |: || :| |:  ||:|  | |: |: |: || ||:|: ||
Db         1317 GCAAAUGUUUUGUCCUUUGUCGAAUCGAUUCGAUCGAGGGUAAUCAUUAACGGUGUGACA 1376

Qy          846 GCTAGGTCTGAATGGGATGTAGATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTC 905
                || |||:| |||:||||:|: || ||| |  :  : ||| ||::|:| |:||| :: : |
Db         1377 GCGAGGUCCGAAUGGGAUGUGGACAAAUCUUUGUUACAAUCCUUGUCCAUGACGUUUUAC 1436

Qy          906 TTGCAGACTAAGCTGGCTGCGCTTCAAGACGATATAGTAATGGGAAAGTTTCGGTGCTTG 965
                 :||| ||:||||: || |  |:  | || ||  :| : |:  | |||::: |   |
Db         1437 CUGCAUACUAAGCUUGCCGUUCUAAAGGAUGACUUACUGAUUAGCAAGUUUAGUCUCGGU 1496

Qy          966 GATAAGACCACTTCTGAACTTATTTGGGATGAGGTGGGCAAATTTTTTGGAAACGTTTTC 1025
                   || ||    :   | | : : :||||:||| :          :::|| ||||  ::
Db         1497 UCGAAAACGGUGUGCCAGCAUGUGUGGGAUGAGAUUUCGCUGGCGUUUGGGAACGCAUUU 1556

Qy         1026 CCCACTATCAAAGAGAGATTGGTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTG 1085
                ||| |  : ||||||||  :  :|| ||||||| :: :    |:    |   | ||  :
Db         1557 CCCUCCGUGAAAGAGAGGCUCUUGAACAGGAAACUUAUCAGAGUGGCAGGCGACGCAUUA 1616

Qy         1086 AAGATCAAGATCCCAGATCTGTATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACC 1145
                 |||:|| | : || ||:|: :|:|: || :   | |||||| :: |:  |:|| :|||
Db         1617 GAGAUCAGGGUGCCUGAUCUAUAUGUGACCUUCCACGACAGAUUAGUGACUGAGUACAAG 1676

Qy         1146 AAGTCTGAGGAGTTACCGCATCTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATG 1205
                   :|:| |||  : ||    |: || |: | |||| |  : |||||| | ||    |:|
Db         1677 GCCUCUGUGGACAUGCCUGCGCUUGACAUUAGGAAGAAGAUGGAAGAAACGGAAGUGAUG 1736

Qy         1206 TACGACGCGTTATCAGAATTATCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAG 1265
                :|| | ||  : :|||| ::|:|  :  : | ||   |:|| || ::|||: :  |
Db         1737 UACAAUGCACUUUCAGAGUUAUCGGUGUUAAGGGAGUCUGACAAAUUCGAUGUUGAUGUU 1796

Qy         1266 TTCAAAGACATGTGCAAGGCTTTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTT 1325
                ::     | |:|:|| |  |::: || |::   ||      ||||||    |: |: |:
Db         1797 UUUUCCCAGAUGUGCCAAUCUUUGGAAGUUGACCCAAUGACGGCAGCGAAGGUUAUAGUC 1856

Qy         1326 GCAGTGGCCGAGAATAGAAGCGGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAAT 1385
                || |:       ||:   |||||: : ||:|: || :::||    || || |||| |||:
Db         1857 GCGGUCAUGAGCAAUGAGAGCGGUCUGACUCUCACAUUUGAACGACCUACUGAGGCGAAU 1916

Qy         1386 GTGGCTAAGGCTCT------TAAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCG 1439
                |: ||    ||: :      : ||   | ||| :| || |  |   :     ::    |
Db         1917 GUUGCGCUAGCUUUACAGGAUCAAGAGAAGGCUUCAGAAGGUGCUUUGGUAGUUACCUCA 1976

Qy         1440 ACATCCGAAGAGGTGAACGTAAATAAATTTTCTATTGCTGAGAAAGGGAGATTGCCTGTG 1499
                | |   |  || |        |  ||   ::| |: ||      || |  |      |
Db         1977 AGAGAAGUUGAAGAACCGUCCAUGAAGGGUUCGAUGGCCAGAGGAGAGUUACAAUUAGCU 2036

Qy         1500 TGTGCAGAAAGTCATGGTTTGACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTC 1559
                 |:   |   |  |:  :  |  |    |  | :   || || ||||| : |||:|  :
Db         2037 GGUCUUGCUGGAGAUCAUCCGGAGUCGUCCUAUUCUAAGAACGAGGAGAUAGAGUCUUUA 2096

Qy         1560 AACGATTTCCATAAGGCTTGCGTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTC 1619
                 |  | :: ||:| |||    |  ||:    : |::   ||||| |:|   :|| ::|:
Db         2097 GAGCAGUUUCAUAUGGCAACGGCAGAUUCGUUAAUUCGUAAGCAGAUGAGCUCGAUUGUG 2156

Qy         1620 TACACTGGCTCACTCAAAGTTCAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCG 1679
                :|||| ||  |  : ||||::|| ||||:||| |||: : : || ||  :|| ||| :|
Db         2157 UACACGGGUCCGAUUAAAGUUCAGCAAAUGAAAAACUUUAUCGAUAGCCUGGUAGCAUCA 2216

Qy         1680 TTGTCCGCCACTGTATCAAATCTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCT 1739
                 : :| ||  | |: :| ||:|:   ||||   |: || ||:  ||  |    :||   :
Db         2217 CUAUCUGCUGCGGUGUCGAAUCUCGUCAAGAUCCUCAAAGAUACAGCUGCUAUUGACCUU 2276

Qy         1740 GATTCCAGGGAGAAAGTTGGTGTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCT 1799
                ||  || |  | ||  ::|| |: : |||:|:  | :  |  |||:|| :  :||||||
Db         2277 GAAACCCGUCAAAAGUUUGGAGUCUUGGAUGUUGCAUCUAGGAAGUGGUUAAUCAAACCA 2336

Qy         1800 GCGGCCAAAGGTCATTCATGGGGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCA 1859
                 |||||||  |:||: ||:|||| |::|:        ||  | ||||      :   ||
Db         2337 ACGGCCAAGAGUCAUGCAUGGGGUGUUGUUGAAACCCACGCGAGGAAGUAUCAUGUGGCG 2396

Qy         1860 CTTCTATCTTATGAAGGAGATAGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTA 1919
                |:: :    :|:|| |   |  |  :||:|||       || :|||| || |: ||:|:
Db         2397 CUUUUGGAAUAUGAUGAGCAGGGUGUGGUGACAUGCGAUGAUUGGAGAAGAGUAGCUGUC 2456

Qy         1920 TCATCTGATACAATGGTATATTCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATG 1979
                   :|:||  |  : |: :|::| || |: || || |:|  || :|:| | | |    :
Db         2457 AGCUCUGAGUCUGUUGUUUAUUCCGACAUGGCGAAACUCAGAACUCUGCGCAGACUGCUU 2516

Qy         1980 AGAGACGGTGAACCCCACGAACCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGT 2039
                 || |||| ||||| || |    :|  |||||| : |: |::|:||| || |: || ||
Db         2517 CGAAACGGAGAACCGCAUGUCAGUAGCGCAAAGGUUGUUCUUGUGGACGGAGUUCCGGGC 2576

Qy         2040 TGTGGAAAGTACAAAGGAGATTTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTT 2099
                :|:|| ||   ||||| |  : ::   ||  :: |: ::||:|| ||: : |: :: |:
Db         2577 UGUGGGAAAACCAAAGAAAUUCUUUCCAGGGUUAAUUUUGAUGAAGAUCUAAUUUUAGUA 2636

Qy         2100 CCTGGAAAACAAGCTGCTGCTATGATCAGAAGAAGGGCTAATTCATCTGGACTGATAAGA 2159
                ||:|| || ||||| || |  |:||:|||||| | || ||::| :| ||  : |:
Db         2637 CCUGGGAAGCAAGCCGCGGAAAUGAUCAGAAGACGUGCGAAUUCCUCAGGGAUUAUUGUG 2696

Qy         2160 GCCACAATGGACAATGTGAGAACGGTAGATTCACTTCTAATGCAT---------CCAAAA 2210
                ||||| | ||||||| |: | ||| |: ||::|  :  : |:| |:            | |
Db         2697 GCCACGAAGGACAACGUUAAAACCGUUGAUUCUUUCAUGAUGAAUUUUGGGAAAAGCACA 2756

Qy         2211 CCGCGATCACACAAGAGGCTTTTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTT 2270
                |   |      ||||||| : :: |::||:||||||::||:| :||| || ||::|:|::
Db         2757 CGCUGUCAGUUCAAGAGGUUAUUCAUUGAUGAAGGGUUGAUGUUGCAUACUGGUUGUGUU 2816

Qy         2271 AACTTCCTGGTGCTTATCTCTGGTTGCGACATCGCATACATTTACGGAGATACACAGCAG 2330
                || :: |: |:|   |: :|    :|||| |: |||:|  :::||||||| |||||||||
Db         2817 AAUUUUCUUGUGGCGAUGUCAUUGUGCGAAAUUGCAUAUGUUUACGGAGACACACAGCAG 2876

Qy         2331 ATTCCTTTCATTAACAGAGTTCAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAA 2390
                |::|| : ||: || ||||::      ::||||:| |||   ||::::|  ||  :| ||
Db         2877 AUUCCAUACAUCAAUAGAGUUUCAGGAUUCCCGUACCCCGCCCAUUUUGCCAAAUUGGAA 2936

Qy         2391 GTGGATGAAGTTGAGATGAGGAGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTC 2450
                |: || || |: ||||   | || || || |:  | :| ||||  ||:|: |    ::
Db         2937 GUUGACGAGGUGGAGACACGCAGAACUACUCUCCGUUGUCCAGCCGAUGUCACACAUUAU 2996

Qy         2451 CTACAATCGAAGTACGAAGGAGCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCA 2510
                |:  |   ||  :| || ||    |: |  | |||::|  | |:  ||   :| |: :|
Db         2997 CUGAACAGGAGAUAUGAGGGCUUUGUCAUGAGCACUUCUUCGGUUAAAAAGUCUGUUUCG 3056

Qy         2511 TCTGAGATGATAGGCGGTAAGGGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGGAAA 2570
                   ||||:| : |||||    |  |:  : ||     : :| |||||  :  | || ||
Db         3057 CAGGAGAUGGUCGGCGGAGCCGCCGUGAUCAAUCCGAUCUCAAAACCCUUGCAUGGCAAG 3116

Qy         2571 ATTGTAACTTTCACTCAGGCTGATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTG 2630
                |:  : ||::: || ||  | ||:|||   |   :       |  || :|:    |:|:
Db         3117 AUCCUGACUUUUACCCAAUCGGAUAAAGAAGCUCUGCUUUCAAGAGGGUAUUCAGAUGUU 3176

Qy         2631 AACACCGTTCATGAGATCCAAGGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACG 2690
                 |||| |: ||:||  : ||||| || || :     ||:|: :| |: |: || :: ||
Db         3177 CACACUGUGCAUGAAGUGCAAGGCGAGACAUACUCUGAUGUUUCACUAGUUAGGUUAACC 3236

Qy         2691 GCAACTCCACTGACTCTGATTTCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGA 2750
                 | || ||| :  |  : |:: |         ||| ||:|:: : |:|||  :| | ||
Db         3237 CCUACACCAGUCUCCAUCAUUGCAGGAGACAGCCCACAUGUUUUGGUCGCAUUGUCAAGG 3296

Qy         2751 CACACAAAGAGCTTCAAATATTACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGT 2810
                |||||        :||| :| :|||| |: |:  : ||:||:::||:    |: |::||
Db         3297 CACACCUGUUCGCUCAAGUACUACACUGUUGUUAUGGAUCCUUUAGUUAGUAUCAUUAGA 3356

Qy         2811 GATTTGTCTTCTTTAAGCTCCTTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGA 2870
                ||: :        : |||:| : | : ::||| |:|:|:| ||: || ||||| |    |
Db         3357 GAUCUAGAGAAACUUAGCUCGUACUUGUUAGAUAUGUAUAAGGUCGAUGCAGGAACACAA 3416

Qy         2871 TAGCAATTACAGATGGATGCAGTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAA 2930
                :|||||::|||||: ||  | |:|::||||||:   ||:|: :::|: ||| | || ||
Db         3417 UAGCAAUUACAGAUUGACUCGGUGUUCAAAGGUUCCAAUCUUUUUGUUGCAGCGCCAAAG 3476

Qy         2931 TCAGGAGACTTTCCAGATCTACAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACT 2990
                 | || ||  :: | ||: : |||:: :| :| ||:   :| |:||| || || || ||
```

```
Db          3477 ACUGGUGAUAUUUCUGAUAUGCAGUUUUACUAUGAUAAGUGUCUCCCAGGCAACAGCACC 3536

Qy          2991 ATACTTAACAAGTATGATGCTGTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAG 3050
                 |:  : || || : :||:||:|::||||:||||::   :|| | :    : ||:|: ||
Db          3537 AUGAUGAAUAAUUUUGAUGCUGUUACCAUGAGGUUGACUGACAUUUCAUUGAAUGUCAAA 3596

Qy          3051 GATTGTGTTCTTGATTTTTCCAAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTA 3110
                 ||::|  :  : ||: : :| ||   : :: |   ||| |||||    |    |   |:|
Db          3597 GAUUGCAUAUUGGAUAUGUCUAAGUCUGUUGCUGCGCCUAAGGAUCAAAUCAAACCACUA 3656

Qy          3111 GAGCCAGTTTTGCGTACCGCGGCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTG 3170
                    ||  :  : || || |||| |||  |||| |     | ||||:| : |||||: :
Db          3657 AUACCUAUGGUACGAACGGCGGCAGAAAUGCCACGCCAGACUGGACUAUUGGAAAAUUUA 3716

Qy          3171 GTTGCAATGATTAAAAGAAATTTCAACGCACCAGACCTGACGGGGACGATTGACATTGAG 3230
                 |: || |:||::||||| || :: |||||||| ||  :| | || |  |::|| |::||
Db          3717 GUGGCGAUGAUUAAAAGGAACUUUAACGCACCCGAGUUGUCUGGCAUCAUUGAUAUUGAA 3776

Qy          3231 AGCACCGCATCTGTTGTAGTAGATAAGTTTTTTGATAGCTATTTTATTAAAAAAGAAAAA 3290
                 |  || |||:|: : |: |:|||:|||::::::||:|| :|:::  ::||| || ||| |
Db          3777 AAUACUGCAUCUUUAGUUGUAGAUAAGUUUUUUGAUAGUUAUUUGCUUAAAGAAAAAAGA 3836

Qy          3291 TACACAAAAAATATTGCTGGAGTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAAC 3350
                  |  |||| || | :| :    :| : |  |  || :|  : |  |||:||:: |||||
Db          3837 AAACCAAAUAAAAAUGUUUCUUUGUUCAGUAGAGAGUCUCUCAAUAGAUGGUUAGAAAAG 3896

Qy          3351 AGGAAAGAAGTACTATTGGACGACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATC 3410
                   | || | |:|  | : | | |  : ||  | :   |::::  |||: :||| ||  :
Db          3897 CAGGAACAGGUAACAAUAGGCCAGCUCGCAGAUUUUGAUUUUGUAGAUUUGCCAGCAGUU 3956

Qy          3411 GATCAGTACAAGCACATGATCAAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAG 3470
                 ||:|||:|||  ||||:||: || || ||||| || || |||::||||  ::|||: ||
Db          3957 GAUCAGUACAGACACAUGAUUAAAGCACAACCCAAGCAAAAAUUGGACACUUCAAUCCAA 4016

Qy          3471 AATGAATACCCTGCTCTGCAAACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTG 3530
                 |  || :|||| ||: :||| || |::|: :||||::| ||  |||:||| |  |: ::
Db          4017 ACGGAGUACCCGGCUUUGCAGACGAUUGUGUACCAUUCAAAAAAGAUCAAUGCAAUAUUU 4076

Qy          3531 GCCGGTTTCT---CAGAGCTTACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTT 3587
                 | |   :: :     ||||::|| |||    : |: ||     ::||::| |  |  :::
Db          4077 GGCCCGUUGUUUAGUGAGCUUACUAGGCAAUUACUGGACAGUGUUGAUUCGAGCAGAUUU 4136

Qy          3588 CTTTTCTTTACTAGGAAAACTCCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCG 3647
                  : :: :: || || || ||||  ||||:: | || :: ::|   ||:|:||||
Db          4137 UUGUUUUUCACAAGAAAGACACCAGCGCAGAUUGAGGAUUUCUUCGGAGAUCUCGACAGU 4196

Qy          3648 CACGTTCCTATGGATGTGTTAGAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAG 3707
                 || |: || |:|||:|: :: || |:|||:|: :| || :| || || :| ||||| ||
Db          4197 CAUGUGCCGAUGGAUGUCUUGGAGCUGGAUAUAUCAAAAUACGACAAAUCUCAGAAUGAA 4256

Qy          3708 TTTCATTGTGCTGTAGAGTATGAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCC 3767
                 :: || :|:|| |:||| :| || |: :||  ||||::|||: :  | || :: ::||
Db          4257 UUCCACUGUGCAGUAGAAUACGAGAUCUGGCGAAGAUUGGGUUUUGAAGACUUCUUGGGA 4316

Qy          3768 GAAGTGTGGAAACAAGGGCACAGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAG 3827
                 ||||: :||||||||||||| || || || ||  : |||||::| |  || || |: ||
Db          4317 GAAGUUUGGAAACAAGGGCAUAGAAAGACCACCCUCAAGGAUUAUACCGCAGGUAUAAAA 4376

Qy          3828 ACATGTCTGTGGTATCAAAGGAAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTT 3887
                 || :|  : :||:|:||||| || |||||| || |: || || ::||: || || ||:|:
Db          4377 ACUUGCAUCUGGUAUCAAAGAAAGAGCGGGGACGUCACGACGUUCAUUGGAAACACUGUG 4436

Qy          3888 ATAATAGCAGCTTGCTTGGGTTCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTT 3947
                 |: |: || || :| ::||  :| |:| : ||||:||| ||  : |: ||||| || :::
Db          4437 AUCAUUGCUGCAUGUUUGGCCUCGAUGCUUCCGAUGGAGAAAAUAAUCAAAGGAGCCUUU 4496

Qy          3948 TGTGGAGACGATTCCGTTTTGTATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCA 4007
                 :| || |||||:    :  :|:| :::||||||||::  || :: || ||  : ||
Db          4497 UGCGGUGACGAUAGUCUGCUGUACUUUCCAAAGGGUUGUGAGUUUCCGGAUGUGCAACAC 4556

Qy          4008 TGTGCTAATCTCATGTGGAATTTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTT 4067
                 :  || ||:|: |:|:||||::::|| || ||||:|: :| |||   |:| || :||:::
Db          4557 UCCGCGAAUCUUAUGUGGAAUUUUGAAGCAAAACUGUUUAAAAAACAGUAUGGAUACUUU 4616

Qy          4068 TGTGGTAGATACATCATACACCATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAG 4127
                 :| || |||:|  : |:||| || || |  |||   |: |:|:|::| ||:||  : |||
Db          4617 UGCGGAAGAUAUGUAAUACAUCACGACAGAGGAUGCAUUGUGUAUUACGAUCCCCUAAAG 4676

Qy          4128 TTGATCTCCAAACTTGGGGCAAAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGG 4187
                 ::||:|:| ||||::|| || ||||| |:||||||::  || |||:: || |||:: ||
Db          4677 UUGAUCUCGAAACUUGGUGCUAAACACAUCAAGGAUUGGGAACACUUGGAGGAGUUCAGA 4736

Qy          4188 GTGTCTTTGTGCGATGTTGCTTGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTG 4247
                   |:|: : :| ||:|::||:  ::|| :    |||   :|       :   | ||| :|
Db          4737 AGGUCUCUUUGUGAUGUUGCUGUUUCGUU---GAACAAUUGUGCGUAUUACACACAGUUG 4793

Qy          4248 AACGCAGCTATCAAGGAGGTTCATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGT 4307
                  |||  ||: :   |||||::||:|| |||||   :   ||::||:::| :: :||  |:
Db          4794 GACGACGCUGUAUGGGAGGUUCAUAAGACCGCCCCUCCAGGUUCGUUUGUUUAUAAAAGU 4853

Qy          4308 GTTAACAAATTTTTGTGTGATAAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAG 4367
                  :    || : :::|: :||:||| :: : :::|||| :::|::: :| |:|||: :
Db          4854 CUGGUGAAGUAUUUGUCUGAUAAAGUUCUUUUUAGAAGUUUGUUUAUAGAUGGCUCUAGU 4913

Qy          4368 TCTCAGAGATACTGTCAAAATTAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACT 4427
                 : : | ||  |  |: || |: |  |||:: |: || |:  | |||  |||  |||:  :
Db          4914 UGUUAAAGGAAAAGUGAAUAUCAAUGAGUUUAUCGACCUGACAAAAAUGGAGAAGAUCUU 4973

Qy          4428 TCCGGCATTCATGACTAAGGTCAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGC 4487
                  ||| |  :  : ||    |: |||||:|::|     :| |  |: || || |: |:||
Db          4974 ACCGUCGAUGUUUACCCCUGUAAAGAGUGUUAUGUGUUCCAAAGUUGAUAAAAUAAUGGU 5033

Qy          4488 TGTTAAGAATGATAGTCTTTCTGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAA 4547
                 :  : ||||:||     : :| || |:  |  : |::||||| |::||| :  :: | |
Db          5034 UCAUGAGAAUGAGUCAUUGUCAGAGGUGAACCUUCUUAAAGGAGUUAAGCUUAUUGAUAG 5093

Qy          4548 AGGGTATGTGTGCTTAGCTGATTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTG 4607
                  || :| |: :| ::||| | :::||: |:  | || |||:||||  : || || || :|
Db          5094 UGGAUACGUCUGUUUAGCCGGUUUGGUCGUCACGGGCGAGUGGAACUUGCCUGACAAUUG 5153

Qy          4608 CCGTGGTGGTGTCAGTGTTTGTATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAAC 4667
                 | | || ||:|: || |: :|: : |: || || || |:| ||||     | || || ||
Db          5154 CAGAGGAGGUGUGAGCGUGUGUCUGGUGGACAAAAGGAUGGAAAGAGCCGACGAGGCCAC 5213

Qy          4668 GCTGGGTGCGTATCACGCCCCTGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAA 4727
                  |: ||  | :|  || |  | ||:   || || |  :::   :: ||| :  : || ||
Db          5214 UCUCGGAUCUUACUACACAGCAGCUGCAAAGAAAAGAUUUCAGUUCAAGGUCGUUCCCAA 5273

Qy          4728 TTATTCAATAACATCCGAGGATGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAA 4787
                 ::|: | |:|||  || |||| ||   |||  ||   :||||||: ::||: ||:|: |
Db          5274 UUAUGCUAUAACCACCCAGGACGCGAUGAAAAACGUCUGGCAAGUUUUAGUUAAUAUUAG 5333

Qy          4788 AGGAGTGGCTATGGAAGAAGGATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGT 4847
                 |   |:|   |:|  ||  || : |:|:||  : :|: :||||:: |: :|  : :|: :
Db          5334 AAAUGUGAAGAUGUCAGCGGGUUUCUGUCCGCUUUCUCUGGAGUUUGUGUCGGUGUGUAU 5393

Qy          4848 AGTACATAAAAATAATGTAAGAAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGG 4907
                  |:  |:| |||:||: :|| |  |||:::||| ||    |::   |  |:|| ||||||
Db          5394 UGUUUAUAGAAAUAAUAUAAAAUUAGGUUUGAGAGAGAAGAUUACAAACGUGAGAGACGG 5453

Qy          4908 CTCGCCAATTGAACTCACTGAAAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGC 4967
                    ||| |: ||||: || || | |: |:|:|| |||::| :||| || |: || |:| |
Db          5454 AGGGCCCAUGGAACUUACAGAAGAAGUCGUUGAUGAGUUCAUGGAAGAUGUCCCUAUGUC 5513

Qy          4968 TGTGA 4972
                   : |
Db          5514 GAUCA 5518

RESULT 12
US-10-828-029-4
; Sequence 4, Application US/10828029
; Publication No. US20040171813A1
;   GENERAL INFORMATION:
;        APPLICANT: GARGER, STEPHEN
;                   HOLTZ, R. BARRY
```

```
;                 McCULLOCH, MICHAEL
;                 TURPEN, THOMAS
;          TITLE OF INVENTION:  A PROCESS FOR ISOLATING AND
;                               PURIFYING VIRUSES SOLUBLE PROTEINS AND PEPTIDES
;                               FROM PLANT SOURCES
;          NUMBER OF SEQUENCES: 5
;          CORRESPONDENCE ADDRESS:
;               ADDRESSEE: Howrey & Simon
;               STREET: 1299 Pennsylvania Avenue N.W.
;               CITY: Washington
;               STATE: DC
;               COUNTRY: USA
;               ZIP: 20004
;          COMPUTER READABLE FORM:
;               MEDIUM TYPE: Diskette
;               COMPUTER: IBM Compatible
;               OPERATING SYSTEM: DOS
;               SOFTWARE: FastSEQ for Windows Version 2.0
;          CURRENT APPLICATION DATA:
;               APPLICATION NUMBER: US/10/828,029
;               FILING DATE: 20-Apr-2004
;               CLASSIFICATION: <Unknown>
;          PRIOR APPLICATION DATA:
;               APPLICATION NUMBER: US/09/962,527
;               FILING DATE: 24-Sep-2001
;               APPLICATION NUMBER: 09/037,751
;               FILING DATE: 10-march-1998
;          ATTORNEY/AGENT INFORMATION:
;               NAME: Halluin, Albert P
;               REGISTRATION NUMBER: 25,277
;               REFERENCE/DOCKET NUMBER: 00801.0140.999
;          TELECOMMUNICATION INFORMATION:
;               TELEPHONE: 650-463-8109
;               TELEFAX: 650-463-8400
;               TELEX: <Unknown>
;      INFORMATION FOR SEQ ID NO: 4:
;          SEQUENCE CHARACTERISTICS:
;               LENGTH: 6475 base pairs
;               TYPE: nucleic acid
;               STRANDEDNESS: single
;               TOPOLOGY: unknown
;          MOLECULE TYPE: Genomic RNA
;          SEQUENCE DESCRIPTION: SEQ ID NO: 4:
US-10-828-029-4

  Query Match             40.8%;  Score 2031;  DB 19;  Length 6475;
  Best Local Similarity   44.4%;  Pred. No. 0;
  Matches 2212;  Conservative  957;  Mismatches 1795;  Indels   21;  Gaps    4;

Qy           6 AAGGTAATTCCTGAGTTTCAAAGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAA 65
               ||   | : ||  | :: |||| ||| || ::: |||| :| ||||||  :||  | ||
Db         537 AAAACAGUCCCCAACUUCCAAAAGGAAGCAUUUGACAGAUACGCAGAAAUUCCUGAAGAC 596

Qy          66 GTCTGCTGCTCTAAAACTTTTCAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGA 125
               |    |:|    || ||::: |||      |||   || |||    || |    || |||
Db         597 GCUGUCUGUCACAAUACUUUCCAGACAAUGCGACAUCAGCCGAUGCAGCAAUCAGGCAGA 656

Qy         126 AGATACGCTGTTGCTCTGCACAGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCG 185
                  :| ||  ::|| |: |||||  : :|:|| |: || |   |:|||:: || || ||
Db         657 GUGUAUGCCAUUGCGCUACACAGCAUAUAUGACAUACCAGCCGAUGAGUUCGGGGCGGCA 716

Qy         186 TTAATATCTAAGAATATACATGTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTA 245
                :  :    || ||: : ||:   :| :|:|| ||:: |   ::  | ||     :  :
Db         717 CUCUUGAGGAAAAAUGUCCAUACGUGCUAUGCCGCUUUCCACUUCUCUGAGAACCUGCUU 776

Qy         246 CTAGACCAGACGGAGGTTACGCTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGAT 305
               |: ||  |  |  | |: |   :  | ||||:   |||   :::     | || || ||
Db         777 CUUGAAGAUUCAUACGUCAAUUUGGACGAAAUCAACGCGUGUUUUUCGCGCGAUGGAGAC 836

Qy         306 GATGTTTCTTTTTTCTTTGCTGATGAAAGTACTTTAAATTATAGTCATAAATACAAAAAT 365
                |  :  | ::::  :::||    || ||:||: : ||::|: |:||:|  :|    ||:
Db         837 AAGUUGACCUUUUCUUUUGCAUCAGAGAGUACUCUUAAUUAUUGUCAUAGUUAUUCUAAU 896

Qy         366 ATCTTGCATTATGTAGTTAAATCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAG 425
               |:  :  | :|:|:    ||| |::||:: || || :|:| :|||   |:::|| : |||
Db         897 AUUCUUAAGUAUGUGUGCAAAACUUACUUCCCGGCCUCUAAUAGAGAGGUUUACAUGAAG 956

Qy         426 GAATTTTTAGTCACTAGGGTTAATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTAT 485
               || :::::||:||| || |::||:|| :||::::|:|| ::: | | | :|||:|| : :
Db         957 GAGUUUUUAGUCACCAGAGUUAAUACCUGGUUUUGUAAGUUUUCUAGAAUAGAUACUUUU 1016

Qy         486 ATTCTGTACAAGAGTGTTAGACAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATG 545
                :: :|:||||  |:|:    ||   | |    ||:||:|| |||:: :|:   || |:|
Db        1017 CUUUUGUACAAAGGUGUGGCCCAUAAAAGUGUAGAUAGUGAGCAGUUUUAUACUGCAAUG 1076

Qy         546 GAAGACGCCTTTGCTTACAAGAAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTT 605
               |||||||| :    ::|||| || ||  : || |:|: |||||  || |||    :| ::
Db        1077 GAAGACGCAUGGCAUUACAAAAAGACUCUUGCAAUGUGCAACAGCGAGAGAAUCCUCCUU 1136

Qy         606 AGAGACACGGCTTCGGTTAACTTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCG 665
                  ||  |  | :| |: || :  :||:: || || |:|| ||| |:||: |: |:|||
Db        1137 GAGGAUUCAUCAUCAGUCAAUUACUGGUUUCCCAAAAUGAGGGAUAUGGUCAUCGUACCA 1196

Qy         666 CTGTTTGAGGGTTCTATTACCAGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGT 725
                : :: ||   ::|: :    |  |  |||| |||  | |  || |:| : |:
Db        1197 UUAUUCGACAUUUCUUUGGAGACUAGUAAGAGGACGCGCAAGGAAGUCUUAGUGUCCAAG 1256

Qy         726 GACTTCGTTTACACAGTGCTTAATCATATCAGAACATATCAAGCCAAAGCGTTAACTTAC 785
               || ::||: :  ||||:||::|| || |:  |||||:| || || |||||  : || :||
Db        1257 GAUUUCGUGUUUACAGUGCUUAACCACAUUCGAACAUACCAGGCGAAAGCUCUUACAUAC 1316

Qy         786 CAGAACGTATTATCTTTCGTGGAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACT 845
                  || |: :: :| :: |: || :| |:  ||:|  | |: |: |: || ||:|: ||
Db        1317 GCAAAUGUUUUGUCCUUUGUCGAAUCGAUUCGAUCGAGGGUAAUCAUUAACGGUGUGACA 1376

Qy         846 GCTAGGTCTGAATGGGATGTAGATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTC 905
               || |||:| |||:||||:|: || ||| |  :  : ||| ||::|:| |:||| :: : |
Db        1377 GCGAGGUCCGAAUGGGAUGUGGACAAAUCUUUGUUACAAUCCUUGUCCAUGACGUUUUAC 1436

Qy         906 TTGCAGACTAAGCTGGCTGCGCTTCAAGACGATATAGTAATGGGAAAGTTTCGGTGCTTG 965
                :||| ||:||||: || |  |:  | || ||  :| : |:  | |||::: |   |
Db        1437 CUGCAUACUAAGCUUGCCGUUCUAAAGGAUGACUUACUGAUUAGCAAGUUUAGUCUCGGU 1496

Qy         966 GATAAGACCACTTCTGAACTTATTTGGGATGAGGTGGGCAAATTTTTTGGAAACGTTTTC 1025
                  || ||    :   | | : : :||||:||| :          :::|| ||||  ::
Db        1497 UCGAAAACGGUGUGCCAGCAUGUGUGGGAUGAGAUUUCGCUGGCGUUUGGGAACGCAUUU 1556

Qy        1026 CCCACTATCAAAGAGAGATTGGTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTG 1085
               ||| |  : ||||||||  :  :|| |||||||| :: :    |:    |   | ||  :
Db        1557 CCCUCCGUGAAAGAGAGGCUCUUGAACAGGAAACUUAUCAGAGUGGCAGGCGACGCAUUA 1616

Qy        1086 AAGATCAAGATCCCAGATCTGTATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACC 1145
                |||:|| | : || ||:|: :|:|: || :   | ||||| :: |:  |:|| :|||
Db        1617 GAGAUCAGGGUGCCUGAUCUAUAUGUGACCUUCCACGACAGAUUAGUGACUGAGUACAAG 1676

Qy        1146 AAGTCTGAGGAGTTACCGCATCTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATG 1205
                  :|:| |||  : ||    |: || |: | |||| |  : |||||| | ||    |:|
Db        1677 GCCUCUGUGGACAUGCCUGCGCUUGACAUUAGGAAGAAGAUGGAAGAAACGGAAGUGAUG 1736

Qy        1206 TACGACGCGTTATCAGAATTATCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAG 1265
               :|| | ||  : :|||| ::|:|  :  : | ||   |:|| || ::|||: : |
Db        1737 UACAAUGCACUUUCAGAGUUAUCGGUGUUAAGGGAGUCUGACAAAUUCGAUGUUGAUGUU 1796

Qy        1266 TTCAAAGACATGTGCAAGGCTTTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTT 1325
               ::     | |:|:|| |  |::: || |::   ||      ||||||    |: |: |:
Db        1797 UUUUCCCAGAUGUGCCAAUCUUUGGAAGUUGACCCAAUGACGGCAGCGAAGGUUAUAGUC 1856

Qy        1326 GCAGTGGCCGAGAATAGAAGCGGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAAT 1385
               || |:       ||:   ||||||: : ||:|: || :::||    || || |||| |||:
Db        1857 GCGGUCAUGAGCAAUGAGAGCGGUCUGACUCUCACAUUUGAACGACCUACUGAGGCGAAU 1916

Qy        1386 GTGGCTAAGGCTCT------TAAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCG 1439
               |: ||    ||: :      : ||   | ||| :| || |  |   :     ::    |
Db        1917 GUUGCGCUAGCUUUACAGGAUCAAGAGAAGGCUUCAGAAGGUGCUUUGGUAGUUACCUCA 1976

Qy        1440 ACATCCGAAGAGGTGAACGTAAATAAATTTTCTATTGCTGAGAAAGGGAGATTGCCTGTG 1499
```

```
           | |   |  || |        |  ||   ::| |: ||      || |  |      |
Db    1977 AGAGAAGUUGAAGAACCGUCCAUGAAGGGUUCGAUGGCCAGAGGAGAGUUACAAUUAGCU 2036

Qy    1500 TGTGCAGAAAGTCATGGTTTGACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTC 1559
            |:   |   |  |:  :  |  |    |  | :   || || ||||| : |||:|  :
Db    2037 GGUCUUGCUGGAGAUCAUCCGGAGUCGUCCUAUUCUAAGAACGAGGAGAUAGAGUCUUUA 2096

Qy    1560 AACGATTTCCATAAGGCTTGCGTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTC 1619
            |  | :: ||:| |||    |  ||:    : |::   ||||| |:|   :|| ::|:
Db    2097 GAGCAGUUUCAUAUGGCAACGGCAGAUUCGUUAAUUCGUAAGCAGAUGAGCUCGAUUGUG 2156

Qy    1620 TACACTGGCTCACTCAAAGTTCAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCG 1679
           :|||| ||  |  : ||||::|| ||||:||| |||: : : || ||  :|| ||| :|
Db    2157 UACACGGGUCCGAUUAAAGUUCAGCAAAUGAAAAACUUUAUCGAUAGCCUGGUAGCAUCA 2216

Qy    1680 TTGTCCGCCACTGTATCAAATCTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCT 1739
            : :| ||  | |: :| ||:|:   ||||   |: || ||:  ||  |    :||   :
Db    2217 CUAUCUGCUGCGGUGUCGAAUCUCGUCAAGAUCCUCAAAGAUACAGCUGCUAUUGACCUU 2276

Qy    1740 GATTCCAGGGAGAAAGTTGGTGTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCT 1799
           ||  || |  | ||  ::|| |: : |||:|:  | :  |  |||:|| :  :||||||
Db    2277 GAAACCCGUCAAAAGUUUGGAGUCUUGGAUGUUGCAUCUAGGAAGUGGUUAAUCAAACCA 2336

Qy    1800 GCGGCCAAAGGTCATTCATGGGGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCA 1859
            |||||||  |:||: ||:|||| |::|:        ||  | ||||      :   ||
Db    2337 ACGGCCAAGAGUCAUGCAUGGGGUGUUGUUGAAACCCACGCGAGGAAGUAUCAUGUGGCG 2396

Qy    1860 CTTCTATCTTATGAAGGAGATAGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTA 1919
           |:: :    :|:|| |   |  |  :||:|||       || :|||| || |: ||:|:
Db    2397 CUUUUGGAAUAUGAUGAGCAGGGUGUGGUGACAUGCGAUGAUUGGAGAAGAGUAGCUGUC 2456

Qy    1920 TCATCTGATACAATGGTATATTCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATG 1979
              :|:||  |  : |: :|::| || |: || || |:|  || :|:| | | |    :
Db    2457 AGCUCUGAGUCUGUUGUUUAUUCCGACAUGGCGAAACUCAGAACUCUGCGCAGACUGCUU 2516

Qy    1980 AGAGACGGTGAACCCCACGAACCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGT 2039
            || |||| ||||| || |    :|  |||||| : |: |::|:||| || |: || ||
Db    2517 CGAAACGGAGAACCGCAUGUCAGUAGCGCAAAGGUUGUUCUUGUGGACGGAGUUCCGGGC 2576

Qy    2040 TGTGGAAAGTACAAAGGAGATTTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTT 2099
           :|:|| ||   ||||| |  : ::   ||  :: |: ::||:|| ||: : |: :: |:
Db    2577 UGUGGGAAAACCAAAGAAAUUCUUUCCAGGGUUAAUUUUGAUGAAGAUCUAAUUUUAGUA 2636

Qy    2100 CCTGGAAAACAAGCTGCTGCTATGATCAGAAGAAGGGCTAATTCATCTGGACTGATAAGA 2159
           ||:|| || ||||| || |  |:||:||||||| | || ||::| :| ||  : |:
Db    2637 CCUGGGAAGCAAGCCGCGGAAAUGAUCAGAAGACGUGCGAAUUCCUCAGGGAUUAUUGUG 2696

Qy    2160 GCCACAATGGACAATGTGAGAACGGTAGATTCACTTCTAATGCAT---------CCAAAA 2210
           ||||| | |||||| |: | ||| |: ||::|  :  : |:| |:            | |
Db    2697 GCCACGAAGGACAACGUUAAAACCGUUGAUUCUUUCAUGAUGAAUUUUGGGAAAAGCACA 2756

Qy    2211 CCGCGATCACACAAGAGGCTTTTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTT 2270
           |   |      ||||||| : :: |::||:||||||::||:| :||| || ||::|:|::
Db    2757 CGCUGUCAGUUCAAGAGGUUAUUCAUUGAUGAAGGGUUGAUGUUGCAUACUGGUUGUGUU 2816

Qy    2271 AACTTCCTGGTGCTTATCTCTGGTTGCGACATCGCATACATTTACGGAGATACACAGCAG 2330
           || :: |: |:|   |: :|    :|||| |: |||:|  :::||||||| |||||||||
Db    2817 AAUUUUCUUGUGGCGAUGUCAUUGUGCGAAAUUGCAUAUGUUUACGGAGACACACAGCAG 2876

Qy    2331 ATTCCTTTCATTAACAGAGTTCAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAA 2390
           |::|| : ||: || ||||::      ::||||:| |||   ||::::|  ||  :| ||
Db    2877 AUUCCAUACAUCAAUAGAGUUUCAGGAUUCCCGUACCCCGCCCAUUUUGCCAAAUUGGAA 2936

Qy    2391 GTGGATGAAGTTGAGATGAGGAGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTC 2450
           |: || || |: ||||   | || || || |:  | :| ||||  ||:|: |    ::
Db    2937 GUUGACGAGGUGGAGACACGCAGAACUACUCUCCGUUGUCCAGCCGAUGUCACACAUUAU 2996

Qy    2451 CTACAATCGAAGTACGAAGGAGCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCA 2510
           |:  |   ||  :| || ||    |: |  | |||::|  | |:  ||   :| |: :|
Db    2997 CUGAACAGGAGAUAUGAGGGCUUUGUCAUGAGCACUUCUUCGGUUAAAAAGUCUGUUUCG 3056

Qy    2511 TCTGAGATGATAGGCGGTAAGGGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGGAAA 2570
              ||||:| : |||||    |  |:  : ||     : :| |||||  :  | || ||
Db    3057 CAGGAGAUGGUCGGCGGAGCCGCCGUGAUCAAUCCGAUCUCAAAACCCUUGCAUGGCAAG 3116

Qy    2571 ATTGTAACTTTCACTCAGGCTGATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTG 2630
           |:  : ||::: || ||  | ||:|||   |   :       |  || :|:    |:|:
Db    3117 AUCCUGACUUUUACCCAAUCGGAUAAAGAAGCUCUGCUUUCAAGAGGGUAUUCAGAUGUU 3176

Qy    2631 AACACCGTTCATGAGATCCAAGGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACG 2690
            |||| |: ||:||  : ||||| || || :     ||:|: :| |: |: || :: ||
Db    3177 CACACUGUGCAUGAAGUGCAAGGCGAGACAUACUCUGAUGUUUCACUAGUUAGGUUAACC 3236

Qy    2691 GCAACTCCACTGACTCTGATTTCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGA 2750
            | || ||| :  |  : |:: |         ||| ||:|:: : |:|||  :| | ||
Db    3237 CCUACACCAGUCUCCAUCAUUGCAGGAGACAGCCCACAUGUUUUGGUCGCAUUGUCAAGG 3296

Qy    2751 CACACAAAGAGCTTCAAATATTACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGT 2810
           |||||        :||| :| :|||| |: |:  : ||:||:::||:    |: |::||
Db    3297 CACACCUGUUCGCUCAAGUACUACACUGUUGUUAUGGAUCCUUUAGUUAGUAUCAUUAGA 3356

Qy    2811 GATTTGTCTTCTTTAAGCTCCTTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGA 2870
           ||: :        : |||:| : | : ::||| |:|:|:| ||: || ||||| |    |
Db    3357 GAUCUAGAGAAACUUAGCUCGUACUUGUUAGAUAUGUAUAAGGUCGAUGCAGGAACACAA 3416

Qy    2871 TAGCAATTACAGATGGATGCAGTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAA 2930
           :|||||::|||||: ||  | |:|::||||||:   ||:|: :::|: ||| | || ||
Db    3417 UAGCAAUUACAGAUUGACUCGGUGUUCAAAGGUUCCAAUCUUUUUGUUGCAGCGCCAAAG 3476

Qy    2931 TCAGGAGACTTTCCAGATCTACAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACT 2990
            | || ||  :: | ||: : |||:: :| :| ||:   :| |:||| || || || ||
Db    3477 ACUGGUGAUAUUUCUGAUAUGCAGUUUUACUAUGAUAAGUGUCUCCCAGGCAACAGCACC 3536

Qy    2991 ATACTTAACAAGTATGATGCTGTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAG 3050
           |:  : || || : :||:||:|::||||:||||::   :|| | :    : ||:|: ||
Db    3537 AUGAUGAAUAAUUUUGAUGCUGUUACCAUGAGGUUGACUGACAUUUCAUUGAAUGUCAAA 3596

Qy    3051 GATTGTGTTCTTGATTTTTCCAAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTA 3110
           ||::|  :  : ||: : :| ||   : :: |   ||| |||||    |    |   |:|
Db    3597 GAUUGCAUAUUGGAUAUGUCUAAGUCUGUUGCUGCGCCUAAGGAUCAAAUCAAACCACUA 3656

Qy    3111 GAGCCAGTTTTGCGTACCGCGGCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTG 3170
              ||  :  : || || ||||| |||  |||| |     | ||||:| : |||||: :
Db    3657 AUACCUAUGGUACGAACGGCGGCAGAAAUGCCACGCCAGACUGGACUAUUGGAAAAUUUA 3716

Qy    3171 GTTGCAATGATTAAAAGAAATTTCAACGCACCAGACCTGACGGGGACGATTGACATTGAG 3230
           |: || |:||::||||| || :: ||||||||| ||  :| | || |  |::|| |::||
Db    3717 GUGGCGAUGAUUAAAAGGAACUUUAACGCACCCGAGUUGUCUGGCAUCAUUGAUAUUGAA 3776

Qy    3231 AGCACCGCATCTGTTGTAGTAGATAAGTTTTTTGATAGCTATTTTATTAAAAAAGAAAAA 3290
           |  || |||:|: : |: |:|||:|||::::::||:|| :|:::  ::||| || ||| |
Db    3777 AAUACUGCAUCUUUAGUUGUAGAUAAGUUUUUUGAUAGUUAUUUGCUUAAAGAAAAAAGA 3836

Qy    3291 TACACAAAAAATATTGCTGGAGTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAAC 3350
            |  |||| || | :| :    :| : |  |  || :|  : |  |||:||:: |||||
Db    3837 AAACCAAAUAAAAAUGUUUCUUUGUUCAGUAGAGAGUCUCUCAAUAGAUGGUUAGAAAAG 3896

Qy    3351 AGGAAAGAAGTACTATTGGACGACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATC 3410
             | || | |:|  | : | | |  : ||  | :   |::::  |||: :||| ||  :
Db    3897 CAGGAACAGGUAACAAUAGGCCAGCUCGCAGAUUUUGAUUUUGUAGAUUUGCCAGCAGUU 3956

Qy    3411 GATCAGTACAAGCACATGATCAAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAG 3470
           ||:|||:|||  ||||:||: || || |||||| || || |||::||||  ::|||: ||
Db    3957 GAUCAGUACAGACACAUGAUUAAAGCACAACCCAAGCAAAAAUUGGACACUUCAAUCCAA 4016

Qy    3471 AATGAATACCCTGCTCTGCAAACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTG 3530
           |  || :||||| ||: :||| || |::|: :||||::| ||  |||:||| |  |: ::
Db    4017 ACGGAGUACCCGGCUUUGCAGACGAUUGUGUACCAUUCAAAAAAGAUCAAUGCAAUAUUU 4076

Qy    3531 GCCGGTTTCT---CAGAGCTTACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTT 3587
           | |   :: :     ||||::|| |||    : |: ||     ::||::| |  |  :::
Db    4077 GGCCCGUUGUUUAGUGAGCUUACUAGGCAAUUACUGGACAGUGUUGAUUCGAGCAGAUUU 4136

Qy    3588 CTTTTCTTTACTAGGAAAACTCCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCG 3647
            : :: :: || || || || ||||  ||||:: | || :: ::|   ||:|:||||
Db    4137 UUGUUUUUCACAAGAAAGACACCAGCGCAGAUUGAGGAUUUCUUCGGAGAUCUCGACAGU 4196
```

```
Qy   3648 CACGTTCCTATGGATGTGTTAGAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAG 3707
          || |: || |:|||:|: :: || |:|||:|: :| || :| || || :| ||||| ||
Db   4197 CAUGUGCCGAUGGAUGUCUUGGAGCUGGAUAUAUCAAAAUACGACAAAUCUCAGAAUGAA 4256

Qy   3708 TTTCATTGTGCTGTAGAGTATGAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCC 3767
          :: || :|:|| |:||| :| || |: :||  ||||::|||: :  | || :: ::||
Db   4257 UUCCACUGUGCAGUAGAAUACGAGAUCUGGCGAAGAUUGGGUUUUGAAGACUUCUUGGGA 4316

Qy   3768 GAAGTGTGGAAACAAGGGCACAGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAG 3827
          ||||: :||||||||||||| || || || ||  : |||||::| |  || || |: ||
Db   4317 GAAGUUUGGAAACAAGGGCAUAGAAAGACCACCCUCAAGGAUUAUACCGCAGGUAUAAAA 4376

Qy   3828 ACATGTCTGTGGTATCAAAGGAAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTT 3887
          || :|  : :||:|:||||| || ||||| || |: || || ::||: || || ||:|:
Db   4377 ACUUGCAUCUGGUAUCAAAGAAAGAGCGGGGACGUCACGACGUUCAUUGGAAACACUGUG 4436

Qy   3888 ATAATAGCAGCTTGCTTGGGTTCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTT 3947
          |: |: || || :| ::||  :| |:| : ||||:||| ||  : |: ||||| || :::
Db   4437 AUCAUUGCUGCAUGUUUGGCCUCGAUGCUUCCGAUGGAGAAAAUAAUCAAAGGAGCCUUU 4496

Qy   3948 TGTGGAGACGATTCCGTTTTGTATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCA 4007
          :| || |||||:    :  :|:| :::||||||||::  || :: || ||  : ||
Db   4497 UGCGGUGACGAUAGUCUGCUGUACUUUCCAAAGGGUUGUGAGUUUCCGGAUGUGCAACAC 4556

Qy   4008 TGTGCTAATCTCATGTGGAATTTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTT 4067
          :  || ||:|: |:|:||||::::|| || ||||:|: :| |||   |:| || :||:::
Db   4557 UCCGCGAAUCUUAUGUGGAAUUUUGAAGCAAAACUGUUUAAAAAACAGUAUGGAUACUUU 4616

Qy   4068 TGTGGTAGATACATCATACACCATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAG 4127
          :| || |||:|  : |:||| || || |  |||   |: |:|:|::| ||:||  : |||
Db   4617 UGCGGAAGAUAUGUAAUACAUCACGACAGAGGAUGCAUUGUGUAUUACGAUCCCCUAAAG 4676

Qy   4128 TTGATCTCCAAACTTGGGGCAAAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGG 4187
          ::||:|:| ||||::|| || ||||| |:||||||::  || |||:: || ||||:: ||
Db   4677 UUGAUCUCGAAACUUGGUGCUAAACACAUCAAGGAUUGGGAACACUUGGAGGAGUUCAGA 4736

Qy   4188 GTGTCTTTGTGCGATGTTGCTTGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTG 4247
            |:|: : :| ||:|::||:  ::|| :    |||   :|       :   | ||| :|
Db   4737 AGGUCUCUUUGUGAUGUUGCUGUUUCGUU---GAACAAUUGUGCGUAUUACACACAGUUG 4793

Qy   4248 AACGCAGCTATCAAGGAGGTTCATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGT 4307
           |||  ||: :   |||||::||:|| |||||   :   ||::||:::| :: :||  |:
Db   4794 GACGACGCUGUAUGGGAGGUUCAUAAGACCGCCCCUCCAGGUUCGUUUGUUUAUAAAAGU 4853

Qy   4308 GTTAACAAATTTTTGTGTGATAAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAG 4367
           :    || : :::|: :||:||| :: : :::|||| :::|::: :| |:|||: :
Db   4854 CUGGUGAAGUAUUUGUCUGAUAAAGUUCUUUUUAGAAGUUUGUUUAUAGAUGGCUCUAGU 4913

Qy   4368 TCTCAGAGATACTGTCAAAATTAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACT 4427
          : : | ||  |  |: || |: |  |||:: |: || |:  | |||  |||  |||:  :
Db   4914 UGUUAAAGGAAAAGUGAAUAUCAAUGAGUUUAUCGACCUGACAAAAAUGGAGAAGAUCUU 4973

Qy   4428 TCCGGCATTCATGACTAAGGTCAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGC 4487
           ||| |  :  : ||    |: |||||:|::|     :| |  |: || || |: |:||
Db   4974 ACCGUCGAUGUUUACCCCUGUAAAGAGUGUUAUGUGUUCCAAAGUUGAUAAAAUAAUGGU 5033

Qy   4488 TGTTAAGAATGATAGTCTTTCTGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAA 4547
          :  : ||||:||     : :| ||   | |  : |::||||| |::||| :  :: | |
Db   5034 UCAUGAGAAUGAGUCAUUGUCAGAGGUGAACCUUCUUAAAGGAGUUAAGCUUAUUGAUAG 5093

Qy   4548 AGGGTATGTGTGCTTAGCTGATTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTG 4607
           || :| |: :| ::||| | :::||: |:|   ||| ||:||||  : || || || :|
Db   5094 UGGAUACGUCUGUUUAGCCGGUUUGGUCGUCACGGGCGAGUGGAACUUGCCUGACAAUUG 5153

Qy   4608 CCGTGGTGGTGTCAGTGTTTGTATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAAC 4667
          | | || ||:|: || |: :|: :|    | || || |:| ||||     | || || ||
Db   5154 CAGAGGAGGUGUGAGCGUGUGUCUGGUGGACAAAAGGAUGGAAAGAGCCGACGAGGCCAC 5213

Qy   4668 GCTGGGTGCGTATCACGCCCCTGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAA 4727
           |: || | :|  || |  | ||:   || || |  :::   :: ||| :  : || ||
Db   5214 UCUCGGAUCUUACUACACAGCAGCUGCAAAGAAAAGAUUUCAGUUCAAGGUCGUUCCCAA 5273

Qy   4728 TTATTCAATAACATCCGAGGATGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAA 4787
          ::|: | |:|||  || |||| ||   |||  ||   :||||||: ::||: ||:|: |
Db   5274 UUAUGCUAUAACCACCCAGGACGCGAUGAAAAACGUCUGGCAAGUUUUAGUUAAUAUUAG 5333

Qy   4788 AGGAGTGGCTATGGAAGAAGGATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGT 4847
          |   |:|   |:|  ||  || : |:|:||  : :|: :||||:: |: :|  : :|: :
Db   5334 AAAUGUGAAGAUGUCAGCGGGUUUCUGUCCGCUUUCUCUGGAGUUUGUGUCGGUGUGUAU 5393

Qy   4848 AGTACATAAAAATAATGTAAGAAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGG 4907
           |:  |:| |||:||: :|| |  |||:::||| ||    |::   |  |:|| ||||||
Db   5394 UGUUUAUAGAAAUAAUAUAAAAUUAGGUUUGAGAGAGAAGAUUACAAACGUGAGAGACGG 5453

Qy   4908 CTCGCCAATTGAACTCACTGAAAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGC 4967
             ||| |: ||||: || ||| | |: |::|| |||::| :||| || |: || |:| |
Db   5454 AGGGCCCAUGGAACUUACAGAAGAAGUCGUUGAUGAGUUCAUGGAAGAUGUCCCUAUGUC 5513

Qy   4968 TGTGA 4972
            : |
Db   5514 GAUCA 5518


RESULT 13
US-10-356-708-1
; Sequence 1, Application US/10356708
; Publication No. US20030157682A1
; GENERAL INFORMATION:
;  APPLICANT: Large Scale Biology Corporation
;  TITLE OF INVENTION: MISMATCH ENDONUCLEASES AND METHODS OF USE THEREOF
;  FILE REFERENCE: P-LG 10100
;  CURRENT APPLICATION NUMBER: US/10/356,708
;  CURRENT FILING DATE:  2003-01-31
;  PRIOR APPLICATION NUMBER: 60/353,722
;  PRIOR FILING DATE: 2000-02-01
;  PRIOR APPLICATION NUMBER: 10/098,155
;  PRIOR FILING DATE: 2002-03-14
;  PRIOR APPLICATION NUMBER: 10/211,079
;  PRIOR FILING DATE: 2002-08-01
;  NUMBER OF SEQ ID NOS: 35
;  SOFTWARE: PatentIn version 3.1
; SEQ ID NO 1
;   LENGTH: 10600
;   TYPE: DNA
;   ORGANISM: Artificial Sequence
;   FEATURE:
;   OTHER INFORMATION: TMV infectious clone containing CEL I gene
US-10-356-708-1

  Query Match             40.8%;  Score 2031;  DB 16;  Length 10600;
  Best Local Similarity   63.6%;  Pred. No. 0;
  Matches 3169;  Conservative    0;  Mismatches 1795;  Indels   21;  Gaps    4;

Qy      6 AAGGTAATTCCTGAGTTTCAAAGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAA 65
          ||   | | ||  | || |||| ||| || ||| |||| || ||||||  |||  | ||
Db    537 AAAACAGTCCCCAACTTCCAAAAGGAAGCATTTGACAGATACGCAGAAATTCCTGAAGAC 596

Qy     66 GTCTGCTGCTCTAAAACTTTTCAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGA 125
          |    |||    || ||||| |||      |||   || |||    || |    || |||
Db    597 GCTGTCTGTCACAATACTTTCCAGACAATGCGACATCAGCCGATGCAGCAATCAGGCAGA 656

Qy    126 AGATACGCTGTTGCTCTGCACAGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCG 185
             || ||  |||| || |||||  | ||||| || || |   ||||||| || || ||
Db    657 GTGTATGCCATTGCGCTACACAGCATATATGACATACCAGCCGATGAGTTCGGGGCGGCA 716

Qy    186 TTAATATCTAAGAATATACATGTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTA 245
           |  |    || ||| | |||   || ||||| |||| |   |     ||     |  |
Db    717 CTCTTGAGGAAAAATGTCCATACGTGCTATGCCGCTTTCCACTTCTCTGAGAACCTGCTT 776

Qy    246 CTAGACCAGACGGAGGTTACGCTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGAT 305
          || ||  |  |  | || |   |  | |||||   |||   |||     | || || ||
Db    777 CTTGAAGATTCATACGTCAATTTGGACGAAATCAACGCGTGTTTTTCGCGCGATGGAGAC 836

Qy    306 GATGTTTCTTTTTTCTTTGCTGATGAAAGTACTTTAAATTATAGTCATAAATACAAAAAT 365
           |  |  | ||||  |||||    || |||||| | |||||| ||||||  ||    |||
```

```
Db       837 AAGTTGACCTTTTCTTTTGCATCAGAGAGTACTCTTAATTATTGTCATAGTTATTCTAAT 896

Qy       366 ATCTTGCATTATGTAGTTAAATCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAG 425
             ||  |  | |||||    ||| ||||||| || || |||| ||||   |||||| | |||
Db       897 ATTCTTAAGTATGTGTGCAAAACTTACTTCCCGGCCTCTAATAGAGAGGTTTACATGAAG 956

Qy       426 GAATTTTTAGTCACTAGGGTTAATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTAT 485
             || |||||||||||| || ||||||| |||||||||||| || | | | ||||||| | |
Db       957 GAGTTTTTAGTCACCAGAGTTAATACCTGGTTTTGTAAGTTTTCTAGAATAGATACTTTT 1016

Qy       486 ATTCTGTACAAGAGTGTTAGACAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATG 545
              || ||||||||  ||||    ||   | |    |||||||| ||||| |||   || |||
Db      1017 CTTTTGTACAAAGGTGTGGCCCATAAAAGTGTAGATAGTGAGCAGTTTTATACTGCAATG 1076

Qy       546 GAAGACGCCTTTGCTTACAAGAAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTT 605
             |||||||| |    |||||| || ||  | || |||| ||||||  || |||    || ||
Db      1077 GAAGACGCATGGCATTACAAAAAGACTCTTGCAATGTGCAACAGCGAGAGAATCCTCCTT 1136

Qy       606 AGAGACACGGCTTCGGTTAACTTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCG 665
                ||  |  | || || || |  ||||| || || |||| ||| ||||| || ||||| 
Db      1137 GAGGATTCATCATCAGTCAATTACTGGTTTCCCAAAATGAGGGATATGGTCATCGTACCA 1196

Qy       666 CTGTTTGAGGGTTCTATTACCAGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGT 725
              | ||  ||  |||| |    |  |  |||| |||  | |  || ||| | ||       
Db      1197 TTATTCGACATTTCTTTGGAGACTAGTAAGAGGACGCGCAAGGAAGTCTTAGTGTCCAAG 1256

Qy       726 GACTTCGTTTACACAGTGCTTAATCATATCAGAACATATCAAGCCAAAGCGTTAACTTAC 785
             || ||||| |  |||||||||||| || ||  ||||||| || || |||||  | || |||
Db      1257 GATTTCGTGTTTACAGTGCTTAACCACATTCGAACATACCAGGCGAAAGCTCTTACATAC 1316

Qy       786 CAGAACGTATTATCTTTCGTGGAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACT 845
                || || || || || || || || ||  ||||  | || || || ||  ||||| || 
Db      1317 GCAAATGTTTTGTCCTTTGTCGAATCGATTCGATCGAGGGTAATCATTAACGGTGTGACA 1376

Qy       846 GCTAGGTCTGAATGGGATGTAGATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTC 905
             || ||||| ||||||||||| || ||| |  |  | ||| ||||||| ||||| || | |
Db      1377 GCGAGGTCCGAATGGGATGTGGACAAATCTTTGTTACAATCCTTGTCCATGACGTTTTAC 1436

Qy       906 TTGCAGACTAAGCTGGCTGCGCTTCAAGACGATATAGTAATGGGAAAGTTTCGGTGCTTG 965
              |||| |||||||| || |  ||  | || ||  || | ||  |  | ||||||| |   |   
Db      1437 CTGCATACTAAGCTTGCCGTTCTAAAGGATGACTTACTGATTAGCAAGTTTAGTCTCGGT 1496

Qy       966 GATAAGACCACTTCTGAACTTATTTGGGATGAGGTGGGCAAATTTTTTGGAAACGTTTTC 1025
                || ||    |   | | | | |||||||||| |          ||||| ||||  || 
Db      1497 TCGAAAACGGTGTGCCAGCATGTGTGGGATGAGATTTCGCTGGCGTTTGGGAACGCATTT 1556

Qy      1026 CCCACTATCAAAGAGAGATTGGTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTG 1085
             ||| |  | ||||||||  |  ||| |||||||| || |    ||    |   | ||  | 
Db      1557 CCCTCCGTGAAAGAGAGGCTCTTGAACAGGAAACTTATCAGAGTGGCAGGCGACGCATTA 1616

Qy      1086 AAGATCAAGATCCCAGATCTGTATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACC 1145
              |||||| | | || ||||| ||||| || |   | |||||| || ||  |||| ||||  
Db      1617 GAGATCAGGGTGCCTGATCTATATGTGACCTTCCACGACAGATTAGTGACTGAGTACAAG 1676

Qy      1146 AAGTCTGAGGAGTTACCGCATCTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATG 1205
                |||| |||  | ||    || || || | |||| |  | |||||| | ||    |||
Db      1677 GCCTCTGTGGACATGCCTGCGCTTGACATTAGGAAGAAGATGGAAGAAACGGAAGTGATG 1736

Qy      1206 TACGACGCGTTATCAGAATTATCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAG 1265
             ||| | ||  | ||||| ||||||  |  | | ||   ||||| || ||||||| | |     
Db      1737 TACAATGCACTTTCAGAGTTATCGGTGTTAAGGGAGTCTGACAAATTCGATGTTGATGTT 1796

Qy      1266 TTCAAAGACATGTGCAAGGCTTTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTT 1325
             ||     | |||||| |  ||||| || |||   ||      ||||||    || || || 
Db      1797 TTTTCCCAGATGTGCCAATCTTTGGAAGTTGACCCAATGACGGCAGCGAAGGTTATAGTC 1856

Qy      1326 GCAGTGGCCGAGAATAGAAGCGGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAAT 1385
             || ||       |||   ||||||| | |||||| || |||||    || || |||| ||||
Db      1857 GCGGTCATGAGCAATGAGAGCGGTCTGACTCTCACATTTGAACGACCTACTGAGGCGAAT 1916

Qy      1386 GTGGCTAAGGCTCT------TAAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCG 1439
             || ||    ||| |      | ||   | ||| || || |  |   |     ||    | 
Db      1917 GTTGCGCTAGCTTTACAGGATCAAGAGAAGGCTTCAGAAGGTGCTTTGGTAGTTACCTCA 1976

Qy      1440 ACATCCGAAGAGGTGAACGTAAATAAATTTTCTATTGCTGAGAAAGGGAGATTGCCTGTG 1499
             | |   |  || |        |  ||   ||| || ||      || |  |      |  
Db      1977 AGAGAAGTTGAAGAACCGTCCATGAAGGGTTCGATGGCCAGAGGAGAGTTACAATTAGCT 2036

Qy      1500 TGTGCAGAAAGTCATGGTTTGACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTC 1559
              ||   |   |  ||  |  |  |    |  | |   ||  || ||||| | |||||  | 
Db      2037 GGTCTTGCTGGAGATCATCCGGAGTCGTCCTATTCTAAGAACGAGGAGATAGAGTCTTTA 2096

Qy      1560 AACGATTTCCATAAGGCTTGCGTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTC 1619
              |  | || |||| |||    |  |||    | |||   ||||| |||    ||| |||| 
Db      2097 GAGCAGTTTCATATGGCAACGGCAGATTCGTTAATTCGTAAGCAGATGAGCTCGATTGTG 2156

Qy      1620 TACACTGGCTCACTCAAAGTTCAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCG 1679
             ||||| ||  |  | |||||||| |||||||||| |||| | | || ||  ||| ||| || 
Db      2157 TACACGGGTCCGATTAAAGTTCAGCAAATGAAAAACTTTATCGATAGCCTGGTAGCATCA 2216

Qy      1680 TTGTCCGCCACTGTATCAAATCTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCT 1739
              | || ||  | || || |||||   ||||   || || | ||  ||  |    |||   |
Db      2217 CTATCTGCTGCGGTGTCGAATCTCGTCAAGATCCTCAAAGATACAGCTGCTATTGACCTT 2276

Qy      1740 GATTCCAGGGAGAAAGTTGGTGTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCT 1799
             ||  || |  | ||  |||| || | ||||||  | |  |  |||||| |  ||||||| 
Db      2277 GAAACCCGTCAAAAGTTTGGAGTCTTGGATGTTGCATCTAGGAAGTGGTTAATCAAACCA 2336

Qy      1800 GCGGCCAAAGGTCATTCATGGGGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCA 1859
              |||||||  ||||| |||||||| |||||        ||  | ||||      |   || 
Db      2337 ACGGCCAAGAGTCATGCATGGGGTGTTGTTGAAACCCACGCGAGGAAGTATCATGTGGCG 2396

Qy      1860 CTTCTATCTTATGAAGGAGATAGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTA 1919
             ||| |    ||||| |   |  |  |||||||       || ||||| || || ||||| 
Db      2397 CTTTTGGAATATGATGAGCAGGGTGTGGTGACATGCGATGATTGGAGAAGAGTAGCTGTC 2456

Qy      1920 TCATCTGATACAATGGTATATTCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATG 1979
                |||||  |  | || ||||| || || || ||| || |||  || |||| | | |    | 
Db      2457 AGCTCTGAGTCTGTTGTTTATTCCGACATGGCGAAACTCAGAACTCTGCGCAGACTGCTT 2516

Qy      1980 AGAGACGGTGAACCCCACGAACCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGT 2039
              || |||| ||||| || |    ||  ||||| | || ||||||| || || || || 
Db      2517 CGAAACGGAGAACCGCATGTCAGTAGCGCAAAGGTTGTTCTTGTGGACGGAGTTCCGGGC 2576

Qy      2040 TGTGGAAAGTACAAAGGAGATTTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTT 2099
             ||||| ||   ||||| |  | ||   ||   || || ||||||| ||| | || || || 
Db      2577 TGTGGGAAAACCAAAGAAATTCTTTCCAGGGTTAATTTTGATGAAGATCTAATTTTAGTA 2636

Qy      2100 CCTGGAAAACAAGCTGCTGCTATGATCAGAAGAAGGGCTAATTCATCTGGACTGATAAGA 2159
             ||||| || ||||| || |  ||||||||||||| | || |||| || ||  | ||    
Db      2637 CCTGGGAAGCAAGCCGCGGAAATGATCAGAAGACGTGCGAATTCCTCAGGGATTATTGTG 2696

Qy      2160 GCCACAATGGACAATGTGAGAACGGTAGATTCACTTCTAATGCAT---------CCAAAA 2210
             ||||| | |||||| || | ||| || |||||  |  | ||| ||            | |
Db      2697 GCCACGAAGGACAACGTTAAAACCGTTGATTCTTTCATGATGAATTTTGGGAAAAGCACA 2756

Qy      2211 CCGCGATCACACAAGAGGCTTTTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTT 2270
             |   |      ||||||| | || |||||||||||||||||||| |||| || |||||||||
Db      2757 CGCTGTCAGTTCAAGAGGTTATTCATTGATGAAGGGTTGATGTTGCATACTGGTTGTGTT 2816

Qy      2271 AACTTCCTGGTGCTTATCTCTGGTTGCGACATCGCATACATTTACGGAGATACACAGCAG 2330
             || || || |||   || ||    |||||  || |||||  |||||||||| |||||||||
Db      2817 AATTTTCTTGTGGCGATGTCATTGTGCGAAATTGCATATGTTTACGGAGACACACAGCAG 2876

Qy      2331 ATTCCTTTCATTAACAGAGTTCAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAA 2390
             ||||| | ||| || |||||||      ||||||| |||   |||||||  ||  || ||
Db      2877 ATTCCATACATCAATAGAGTTTCAGGATTCCCGTACCCCGCCCATTTTGCCAAATTGGAA 2936

Qy      2391 GTGGATGAAGTTGAGATGAGGAGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTC 2450
             || || || || ||||   | || || || ||  | || ||||  |||||  |    ||  
Db      2937 GTTGACGAGGTGGAGACACGCAGAACTACTCTCCGTTGTCCAGCCGATGTCACACATTAT 2996

Qy      2451 CTACAATCGAAGTACGAAGGAGCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCA 2510
             ||  |   ||  || || ||    || |  | ||||||  | ||  ||    || || || 
Db      2997 CTGAACAGGAGATATGAGGGCTTTGTCATGAGCACTTCTTCGGTTAAAAAGTCTGTTTCG 3056
```

```
Qy       2511 TCTGAGATGATAGGCGGTAAGGGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGGAAA 2570
Db       3057 CAGGAGATGGTCGGCGGAGCCGCCGTGATCAATCCGATCTCAAAACCCTTGCATGGCAAG 3116

Qy       2571 ATTGTAACTTTCACTCAGGCTGATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTG 2630
Db       3117 ATCCTGACTTTTACCCAATCGGATAAAGAAGCTCTGCTTTCAAGAGGGTATTCAGATGTT 3176

Qy       2631 AACACCGTTCATGAGATCCAAGGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACG 2690
Db       3177 CACACTGTGCATGAAGTGCAAGGCGAGACATACTCTGATGTTTCACTAGTTAGGTTAACC 3236

Qy       2691 GCAACTCCACTGACTCTGATTTCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGA 2750
Db       3237 CCTACACCAGTCTCCATCATTGCAGGAGACAGCCCACATGTTTTGGTCGCATTGTCAAGG 3296

Qy       2751 CACACAAAGAGCTTCAAATATTACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGT 2810
Db       3297 CACACCTGTTCGCTCAAGTACTACACTGTTGTTATGGATCCTTTAGTTAGTATCATTAGA 3356

Qy       2811 GATTTGTCTTCTTTAAGCTCCTTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGA 2870
Db       3357 GATCTAGAGAAACTTAGCTCGTACTTGTTAGATATGTATAAGGTCGATGCAGGAACACAA 3416

Qy       2871 TAGCAATTACAGATGGATGCAGTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAA 2930
Db       3417 TAGCAATTACAGATTGACTCGGTGTTCAAAGGTTCCAATCTTTTTGTTGCAGCGCCAAAG 3476

Qy       2931 TCAGGAGACTTTCCAGATCTACAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACT 2990
Db       3477 ACTGGTGATATTTCTGATATGCAGTTTTACTATGATAAGTGTCTCCCAGGCAACAGCACC 3536

Qy       2991 ATACTTAACAAGTATGATGCTGTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAG 3050
Db       3537 ATGATGAATAATTTTGATGCTGTTACCATGAGGTTGACTGACATTTCATTGAATGTCAAA 3596

Qy       3051 GATTGTGTTCTTGATTTTTCCAAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTA 3110
Db       3597 GATTGCATATTGGATATGTCTAAGTCTGTTGCTGCGCCTAAGGATCAAATCAAACCACTA 3656

Qy       3111 GAGCCAGTTTTGCGTACCGCGGCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTG 3170
Db       3657 ATACCTATGGTACGAACGGCGGCAGAAATGCCACGCCAGACTGGACTATTGGAAAATTTA 3716

Qy       3171 GTTGCAATGATTAAAAGAAATTTCAACGCACCAGACCTGACGGGGACGATTGACATTGAG 3230
Db       3717 GTGGCGATGATTAAAAGGAACTTTAACGCACCCGAGTTGTCTGGCATCATTGATATTGAA 3776

Qy       3231 AGCACCGCATCTGTTGTAGTAGATAAGTTTTTTGATAGCTATTTTATTAAAAAAGAAAAA 3290
Db       3777 AATACTGCATCTTTAGTTGTAGATAAGTTTTTTGATAGTTATTTGCTTAAAGAAAAAAGA 3836

Qy       3291 TACACAAAAAATATTGCTGGAGTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAAC 3350
Db       3837 AAACCAAATAAAAATGTTTCTTTGTTCAGTAGAGAGTCTCTCAATAGATGGTTAGAAAAG 3896

Qy       3351 AGGAAAGAAGTACTATTGGACGACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATC 3410
Db       3897 CAGGAACAGGTAACAATAGGCCAGCTCGCAGATTTTGATTTTGTAGATTTGCCAGCAGTT 3956

Qy       3411 GATCAGTACAAGCACATGATCAAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAG 3470
Db       3957 GATCAGTACAGACACATGATTAAAGCACAACCCAAGCAAAAATTGGACACTTCAATCCAA 4016

Qy       3471 AATGAATACCCTGCTCTGCAAACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTG 3530
Db       4017 ACGGAGTACCCGGCTTTGCAGACGATTGTGTACCATTCAAAAAAGATCAATGCAATATTT 4076

Qy       3531 GCCGGTTTCT---CAGAGCTTACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTT 3587
Db       4077 GGCCCGTTGTTTAGTGAGCTTACTAGGCAATTACTGGACAGTGTTGATTCGAGCAGATTT 4136

Qy       3588 CTTTTCTTTACTAGGAAAACTCCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCG 3647
```

```
Db       4137 TTGTTTTTCACAAGAAAGACACCAGCGCAGATTGAGGATTTCTTCGGAGATCTCGACAGT 4196

Qy       3648 CACGTTCCTATGGATGTGTTAGAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAG 3707
Db       4197 CATGTGCCGATGGATGTCTTGGAGCTGGATATATCAAAATACGACAAATCTCAGAATGAA 4256

Qy       3708 TTTCATTGTGCTGTAGAGTATGAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCC 3767
Db       4257 TTCCACTGTGCAGTAGAATACGAGATCTGGCGAAGATTGGGTTTTGAAGACTTCTTGGGA 4316

Qy       3768 GAAGTGTGGAAACAAGGGCACAGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAG 3827
Db       4317 GAAGTTTGGAAACAAGGGCATAGAAAGACCACCCTCAAGGATTATACCGCAGGTATAAAA 4376

Qy       3828 ACATGTCTGTGGTATCAAAGGAAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTT 3887
Db       4377 ACTTGCATCTGGTATCAAAGAAAGAGCGGGGACGTCACGACGTTCATTGGAAACACTGTG 4436

Qy       3888 ATAATAGCAGCTTGCTTGGGTTCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTT 3947
Db       4437 ATCATTGCTGCATGTTTGGCCTCGATGCTTCCGATGGAGAAAATAATCAAAGGAGCCTTT 4496

Qy       3948 TGTGGAGACGATTCCGTTTTGTATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCA 4007
Db       4497 TGCGGTGACGATAGTCTGCTGTACTTTCCAAAGGGTTGTGAGTTTCCGGATGTGCAACAC 4556

Qy       4008 TGTGCTAATCTCATGTGGAATTTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTT 4067
Db       4557 TCCGCGAATCTTATGTGGAATTTTGAAGCAAAACTGTTTAAAAAACAGTATGGATACTTT 4616

Qy       4068 TGTGGTAGATACATCATACACCATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAG 4127
Db       4617 TGCGGAAGATATGTAATACATCACGACAGAGGATGCATTGTGTATTACGATCCCCTAAAG 4676

Qy       4128 TTGATCTCCAAACTTGGGGCAAAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGG 4187
Db       4677 TTGATCTCGAAACTTGGTGCTAAACACATCAAGGATTGGGAACACTTGGAGGAGTTCAGA 4736

Qy       4188 GTGTCTTTGTGCGATGTTGCTTGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTG 4247
Db       4737 AGGTCTCTTTGTGATGTTGCTGTTTCGTT---GAACAATTGTGCGTATTACACACAGTTG 4793

Qy       4248 AACGCAGCTATCAAGGAGGTTCATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGT 4307
Db       4794 GACGACGCTGTATGGGAGGTTCATAAGACCGCCCCTCCAGGTTCGTTTGTTTATAAAAGT 4853

Qy       4308 GTTAACAAATTTTTGTGTGATAAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAG 4367
Db       4854 CTGGTGAAGTATTTGTCTGATAAAGTTCTTTTTAGAAGTTTGTTTATAGATGGCTCTAGT 4913

Qy       4368 TCTCAGAGATACTGTCAAAATTAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACT 4427
Db       4914 TGTTAAAGGAAAAGTGAATATCAATGAGTTTATCGACCTGACAAAAATGGAGAAGATCTT 4973

Qy       4428 TCCGGCATTCATGACTAAGGTCAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGC 4487
Db       4974 ACCGTCGATGTTTACCCCTGTAAAGAGTGTTATGTGTTCCAAAGTTGATAAAATAATGGT 5033

Qy       4488 TGTTAAGAATGATAGTCTTTCTGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAA 4547
Db       5034 TCATGAGAATGAGTCATTGTCAGAGGTGAACCTTCTTAAAGGAGTTAAGCTTATTGATAG 5093

Qy       4548 AGGGTATGTGTGCTTAGCTGATTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTG 4607
Db       5094 TGGATACGTCTGTTTAGCCGGTTTGGTCGTCACGGGCGAGTGGAACTTGCCTGACAATTG 5153

Qy       4608 CCGTGGTGGTGTCAGTGTTTGTATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAAC 4667
Db       5154 CAGAGGAGGTGTGAGCGTGTGTCTGGTGGACAAAAGGATGGAAAGAGCCGACGAGGCCAC 5213

Qy       4668 GCTGGGTGCGTATCACGCCCCTGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAA 4727
```

```
Db       5214 TCTCGGATCTTACTACACAGCAGCTGCAAAGAAAAGATTTCAGTTCAAGGTCGTTCCCAA 5273

Qy       4728 TTATTCAATAACATCCGAGGATGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAA 4787
              |||| | |||||  || |||| ||   |||  ||   |||||||| ||||| ||||| |
Db       5274 TTATGCTATAACCACCCAGGACGCGATGAAAAACGTCTGGCAAGTTTTAGTTAATATTAG 5333

Qy       4788 AGGAGTGGCTATGGAAGAAGGATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGT 4847
              |   |||   |||  ||  || | ||||||  | ||| ||||||| || ||  | ||| |
Db       5334 AAATGTGAAGATGTCAGCGGGTTTCTGTCCGCTTTCTCTGGAGTTTGTGTCGGTGTGTAT 5393

Qy       4848 AGTACATAAAAATAATGTAAGAAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGG 4907
               ||  ||| ||||||| ||| |  ||||||||| ||    |||   |  |||| ||||||
Db       5394 TGTTTATAGAAATAATATAAAATTAGGTTTGAGAGAGAAGATTACAAACGTGAGAGACGG 5453

Qy       4908 CTCGCCAATTGAACTCACTGAAAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGC 4967
                 ||| || ||||| || ||| | || |||| ||||||| |||| || || || ||| |
Db       5454 AGGGCCCATGGAACTTACAGAAGAAGTCGTTGATGAGTTCATGGAAGATGTCCCTATGTC 5513

Qy       4968 TGTGA 4972
                | |
Db       5514 GATCA 5518
```

```
RESULT 14
US-10-280-913A-1
; Sequence 1, Application US/10280913A
; Publication No. US20040110130A1
; GENERAL INFORMATION:
;  APPLICANT: Large Scale Biology Corporation
;  TITLE OF INVENTION: POPULATION OF POLYNUCLEOTIDE SEQUENCE VARIANTS
;  FILE REFERENCE: LSBC-PLG5392-CIP
;  CURRENT APPLICATION NUMBER: US/10/280,913A
;  CURRENT FILING DATE:  2002-10-25
;  PRIOR APPLICATION NUMBER: 60/402,342
;  PRIOR FILING DATE: 2002-08-08
;  PRIOR APPLICATION NUMBER: 10/066,390
;  PRIOR FILING DATE: 2002-02-01
;  PRIOR APPLICATION NUMBER: 60/268,785
;  PRIOR FILING DATE: 2001-02-14
;  PRIOR APPLICATION NUMBER: 60/266,386
;  PRIOR FILING DATE: 2002-02-02
;  NUMBER OF SEQ ID NOS: 35
;  SOFTWARE: PatentIn version 3.1
; SEQ ID NO 1
;   LENGTH: 10600
;   TYPE: DNA
;   ORGANISM: Artificial Sequence
;   FEATURE:
;   OTHER INFORMATION: TMV infectious clone containing CEL I gene
US-10-280-913A-1

  Query Match             40.8%;  Score 2031;  DB 19;  Length 10600;
  Best Local Similarity   63.6%;  Pred. No. 0;
  Matches 3169;  Conservative    0;  Mismatches 1795;  Indels   21;  Gaps    4;

Qy          6 AAGGTAATTCCTGAGTTTCAAAGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAA 65
              ||   | | ||  | || |||| ||| || ||| |||| || ||||||  |||  | ||
Db        537 AAAACAGTCCCCAACTTCCAAAAGGAAGCATTTGACAGATACGCAGAAATTCCTGAAGAC 596

Qy         66 GTCTGCTGCTCTAAAACTTTTCAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGA 125
              |    |||    || ||||| |||      |||   || |||    || |    || |||
Db        597 GCTGTCTGTCACAATACTTTCCAGACAATGCGACATCAGCCGATGCAGCAATCAGGCAGA 656

Qy        126 AGATACGCTGTTGCTCTGCACAGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCG 185
                 || ||  |||| || ||||||  | |||||| || || |   ||||||| || || ||
Db        657 GTGTATGCCATTGCGCTACACAGCATATATGACATACCAGCCGATGAGTTCGGGGCGGCA 716

Qy        186 TTAATATCTAAGAATATACATGTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTA 245
               |  |    || ||| | |||   || ||||| |||| |   ||  | ||     |  |
Db        717 CTCTTGAGGAAAAATGTCCATACGTGCTATGCCGCTTTCCACTTCTCTGAGAACCTGCTT 776

Qy        246 CTAGACCAGACGGAGGTTACGCTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGAT 305
              || ||  |  |  | || |   |  | |||||   |||   |||     | || || ||
```

```
Db        777 CTTGAAGATTCATACGTCAATTTGGACGAAATCAACGCGTGTTTTTCGCGCGATGGAGAC 836

Qy        306 GATGTTTCTTTTTTCTTTGCTGATGAAAGTACTTTAAATTATAGTCATAAATACAAAAAT 365
               |  |  | ||||  |||||    || |||||| | |||||| ||||||  ||    |||
Db        837 AAGTTGACCTTTTCTTTTGCATCAGAGAGTACTCTTAATTATTGTCATAGTTATTCTAAT 896

Qy        366 ATCTTGCATTATGTAGTTAAATCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAG 425
              ||  |  | |||||    ||| ||||||| || || |||| ||||   ||||||| | |||
Db        897 ATTCTTAAGTATGTGTGCAAAACTTACTTCCCGGCCTCTAATAGAGAGGTTTACATGAAG 956

Qy        426 GAATTTTTAGTCACTAGGGTTAATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTAT 485
              || ||||||||||| || |||||||| ||||||||||| ||| | | | ||||||| | |
Db        957 GAGTTTTTAGTCACCAGAGTTAATACCTGGTTTTGTAAGTTTTCTAGAATAGATACTTTT 1016

Qy        486 ATTCTGTACAAGAGTGTTAGACAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATG 545
               || |||||||  ||||    ||   | |    ||||||||| ||||| |||   || |||
Db       1017 CTTTTGTACAAAGGTGTGGCCCATAAAAGTGTAGATAGTGAGCAGTTTTATACTGCAATG 1076

Qy        546 GAAGACGCCTTTGCTTACAAGAAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTT 605
              |||||||| |    ||||||| || ||  | || |||| |||||  || |||    || ||
Db       1077 GAAGACGCATGGCATTACAAAAAGACTCTTGCAATGTGCAACAGCGAGAGAATCCTCCTT 1136

Qy        606 AGAGACACGGCTTCGGTTAACTTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCG 665
                 ||  |  | || || || |  ||||| || || |||| ||| ||||| || |||||
Db       1137 GAGGATTCATCATCAGTCAATTACTGGTTTCCCAAAATGAGGGATATGGTCATCGTACCA 1196

Qy        666 CTGTTTGAGGGTTCTATTACCAGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGT 725
               | || ||   |||| |    |  |  |||| |||  | |  || ||| | ||
Db       1197 TTATTCGACATTTCTTTGGAGACTAGTAAGAGGACGCGCAAGGAAGTCTTAGTGTCCAAG 1256

Qy        726 GACTTCGTTTACACAGTGCTTAATCATATCAGAACATATCAAGCCAAAGCGTTAACTTAC 785
              || ||||| |  |||||||||||| || ||  ||||||| || || |||||  | || |||
Db       1257 GATTTCGTGTTTACAGTGCTTAACCACATTCGAACATACCAGGCGAAAGCTCTTACATAC 1316

Qy        786 CAGAACGTATTATCTTTCGTGGAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACT 845
                 || || || || || || || || ||  ||||  | || || || || ||||| ||
Db       1317 GCAAATGTTTTGTCCTTTGTCGAATCGATTCGATCGAGGGTAATCATTAACGGTGTGACA 1376

Qy        846 GCTAGGTCTGAATGGGATGTAGATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTC 905
              || ||||| ||||||||||| || ||| |  |  | ||| ||||||| ||||| || | |
Db       1377 GCGAGGTCCGAATGGGATGTGGACAAATCTTTGTTACAATCCTTGTCCATGACGTTTTAC 1436

Qy        906 TTGCAGACTAAGCTGGCTGCGCTTCAAGACGATATAGTAATGGGAAAGTTTCGGTGCTTG 965
               |||| |||||||| || |  ||  | || ||  || | ||  | ||||||| |   |
Db       1437 CTGCATACTAAGCTTGCCGTTCTAAAGGATGACTTACTGATTAGCAAGTTTAGTCTCGGT 1496

Qy        966 GATAAGACCACTTCTGAACTTATTTGGGATGAGGTGGGCAAATTTTTTGGAAACGTTTTC 1025
                 || ||    |   | | | | ||||||||| |          ||||| ||||  ||
Db       1497 TCGAAAACGGTGTGCCAGCATGTGTGGGATGAGATTTCGCTGGCGTTTGGGAACGCATTT 1556

Qy       1026 CCCACTATCAAAGAGAGATTGGTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTG 1085
              ||| |  | ||||||||  |  ||| ||||||| || |    ||    |   | ||  |
Db       1557 CCCTCCGTGAAAGAGAGGCTCTTGAACAGGAAACTTATCAGAGTGGCAGGCGACGCATTA 1616

Qy       1086 AAGATCAAGATCCCAGATCTGTATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACC 1145
               |||||| | | || ||||| ||||| || |   | ||||| || ||  |||| ||||
Db       1617 GAGATCAGGGTGCCTGATCTATATGTGACCTTCCACGACAGATTAGTGACTGAGTACAAG 1676

Qy       1146 AAGTCTGAGGAGTTACCGCATCTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATG 1205
                 |||| |||  | ||    || || || | |||| |  | |||||| | ||    |||
Db       1677 GCCTCTGTGGACATGCCTGCGCTTGACATTAGGAAGAAGATGGAAGAAACGGAAGTGATG 1736

Qy       1206 TACGACGCGTTATCAGAATTATCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAG 1265
              ||| | ||  | ||||| ||||||  |  | | ||   ||||| || ||||||| | |
Db       1737 TACAATGCACTTTCAGAGTTATCGGTGTTAAGGGAGTCTGACAAATTCGATGTTGATGTT 1796

Qy       1266 TTCAAAGACATGTGCAAGGCTTTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTT 1325
              ||     | |||||| |  |||| || |||   ||      ||||||    || || ||
Db       1797 TTTTCCCAGATGTGCCAATCTTTGGAAGTTGACCCAATGACGGCAGCGAAGGTTATAGTC 1856

Qy       1326 GCAGTGGCCGAGAATAGAAGCGGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAAT 1385
              || ||       |||   ||||||| | |||||| || |||||    || || |||| ||||
Db       1857 GCGGTCATGAGCAATGAGAGCGGTCTGACTCTCACATTTGAACGACCTACTGAGGCGAAT 1916
```

```
Qy   1386 GTGGCTAAGGCTCT------TAAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCG 1439
          || ||    ||| |      | ||   | ||| || || |  |   |     ||    |
Db   1917 GTTGCGCTAGCTTTACAGGATCAAGAGAAGGCTTCAGAAGGTGCTTTGGTAGTTACCTCA 1976

Qy   1440 ACATCCGAAGAGGTGAACGTAAATAAATTTTCTATTGCTGAGAAAGGGAGATTGCCTGTG 1499
          | |   |  || |        |  ||   ||| || ||      || |  |      |
Db   1977 AGAGAAGTTGAAGAACCGTCCATGAAGGGTTCGATGGCCAGAGGAGAGTTACAATTAGCT 2036

Qy   1500 TGTGCAGAAAGTCATGGTTTGACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTC 1559
           ||   |   |  ||  |  |  |    |  | |   || || ||||| | |||||  |
Db   2037 GGTCTTGCTGGAGATCATCCGGAGTCGTCCTATTCTAAGAACGAGGAGATAGAGTCTTTA 2096

Qy   1560 AACGATTTCCATAAGGCTTGCGTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTC 1619
           |  | || |||| |||    |  |||    | |||   ||||| |||   ||| ||||
Db   2097 GAGCAGTTTCATATGGCAACGGCAGATTCGTTAATTCGTAAGCAGATGAGCTCGATTGTG 2156

Qy   1620 TACACTGGCTCACTCAAAGTTCAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCG 1679
          ||||| ||  |  | |||||||| |||||||| |||| | | || ||  ||| ||| ||
Db   2157 TACACGGGTCCGATTAAAGTTCAGCAAATGAAAAACTTTATCGATAGCCTGGTAGCATCA 2216

Qy   1680 TTGTCCGCCACTGTATCAAATCTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCT 1739
           | || ||  | || || |||||   ||||   || || |||  ||  |    |||   |
Db   2217 CTATCTGCTGCGGTGTCGAATCTCGTCAAGATCCTCAAAGATACAGCTGCTATTGACCTT 2276

Qy   1740 GATTCCAGGGAGAAAGTTGGTGTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCT 1799
          ||  || |  | ||  | || || | ||||||  | |  |  |||||| |  |||||||
Db   2277 GAAACCCGTCAAAAGTTTGGAGTCTTGGATGTTGCATCTAGGAAGTGGTTAATCAAACCA 2336

Qy   1800 GCGGCCAAAGGTCATTCATGGGGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCA 1859
           |||||||  ||||| |||||||| |||||        ||  | ||||      |   ||
Db   2337 ACGGCCAAGAGTCATGCATGGGGTGTTGTTGAAACCCACGCGAGGAAGTATCATGTGGCG 2396

Qy   1860 CTTCTATCTTATGAAGGAGATAGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTA 1919
          ||| |    ||||| |   |  |  |||||||       || ||||| || || |||||
Db   2397 CTTTTGGAATATGATGAGCAGGGTGTGGTGACATGCGATGATTGGAGAAGAGTAGCTGTC 2456

Qy   1920 TCATCTGATACAATGGTATATTCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATG 1979
             |||||  |  | || ||||| || || || || |||  || |||| | | |    |
Db   2457 AGCTCTGAGTCTGTTGTTTATTCCGACATGGCGAAACTCAGAACTCTGCGCAGACTGCTT 2516

Qy   1980 AGAGACGGTGAACCCCACGAACCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGT 2039
           || |||| ||||| || |    ||  |||||| | || |||||||| || || || ||
Db   2517 CGAAACGGAGAACCGCATGTCAGTAGCGCAAAGGTTGTTCTTGTGGACGGAGTTCCGGGC 2576

Qy   2040 TGTGGAAAGTACAAAGGAGATTTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTT 2099
          ||||| ||   ||||| |  | ||   ||  || || ||||||| ||| | || || ||
Db   2577 TGTGGGAAAACCAAAGAAATTCTTTCCAGGGTTAATTTTGATGAAGATCTAATTTTAGTA 2636

Qy   2100 CCTGGAAAACAAGCTGCTGCTATGATCAGAAGAAGGGCTAATTCATCTGGACTGATAAGA 2159
          ||||| || ||||| || |  |||||||||||| | || ||||| || ||  | ||
Db   2637 CCTGGGAAGCAAGCCGCGGAAATGATCAGAAGACGTGCGAATTCCTCAGGGATTATTGTG 2696

Qy   2160 GCCACAATGGACAATGTGAGAACGGTAGATTCACTTCTAATGCAT---------CCAAAA 2210
          ||||| | ||||||| || | ||| || |||||  |  | ||| ||            | |
Db   2697 GCCACGAAGGACAACGTTAAAACCGTTGATTCTTTCATGATGAATTTTGGGAAAAGCACA 2756

Qy   2211 CCGCGATCACACAAGAGGCTTTTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTT 2270
          |   |      ||||||| | || |||||||||||||||||| |||| || |||||||||
Db   2757 CGCTGTCAGTTCAAGAGGTTATTCATTGATGAAGGGTTGATGTTGCATACTGGTTGTGTT 2816

Qy   2271 AACTTCCTGGTGCTTATCTCTGGTTGCGACATCGCATACATTTACGGAGATACACAGCAG 2330
          || || || |||   || ||    |||||  || |||||  |||||||||| |||||||||
Db   2817 AATTTTCTTGTGGCGATGTCATTGTGCGAAATTGCATATGTTTACGGAGACACACAGCAG 2876

Qy   2331 ATTCCTTTCATTAACAGAGTTCAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAA 2390
          ||||| | ||| || |||||||      |||||||| |||   |||||||  ||  || ||
Db   2877 ATTCCATACATCAATAGAGTTTCAGGATTCCCGTACCCCGCCCATTTTGCCAAATTGGAA 2936

Qy   2391 GTGGATGAAGTTGAGATGAGGAGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTC 2450
          || || || || ||||   | || || || ||  | || ||||  ||||| |    ||
Db   2937 GTTGACGAGGTGGAGACACGCAGAACTACTCTCCGTTGTCCAGCCGATGTCACACATTAT 2996
```

```
Qy   2451 CTACAATCGAAGTACGAAGGAGCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCA 2510
          ||  |   ||  || || ||    || |  | ||||||  | ||  ||   || || ||
Db   2997 CTGAACAGGAGATATGAGGGCTTTGTCATGAGCACTTCTTCGGTTAAAAAGTCTGTTTCG 3056

Qy   2511 TCTGAGATGATAGGCGGTAAGGGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGGAAA 2570
             |||||| | |||||    |  ||  | ||     | || |||||  |  | || ||
Db   3057 CAGGAGATGGTCGGCGGAGCCGCCGTGATCAATCCGATCTCAAAACCCTTGCATGGCAAG 3116

Qy   2571 ATTGTAACTTTCACTCAGGCTGATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTG 2630
          ||  | ||||| || ||  | ||||||   |   |       |  || |||    ||||
Db   3117 ATCCTGACTTTTACCCAATCGGATAAAGAAGCTCTGCTTTCAAGAGGGTATTCAGATGTT 3176

Qy   2631 AACACCGTTCATGAGATCCAAGGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACG 2690
           |||| || |||||  | ||||| || || |     ||||| || || || || || ||
Db   3177 CACACTGTGCATGAAGTGCAAGGCGAGACATACTCTGATGTTTCACTAGTTAGGTTAACC 3236

Qy   2691 GCAACTCCACTGACTCTGATTTCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGA 2750
           | || ||| |  |  | ||| |         ||| |||||| | |||||  || | ||
Db   3237 CCTACACCAGTCTCCATCATTGCAGGAGACAGCCCACATGTTTTGGTCGCATTGTCAAGG 3296

Qy   2751 CACACAAAGAGCTTCAAATATTACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGT 2810
          |||||        |||| || ||||| || ||  | |||||||||||     || |||||
Db   3297 CACACCTGTTCGCTCAAGTACTACACTGTTGTTATGGATCCTTTAGTTAGTATCATTAGA 3356

Qy   2811 GATTTGTCTTCTTTAAGCTCCTTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGA 2870
          ||| |        | ||||| | | | ||||| ||||||| ||| || ||||| |    |
Db   3357 GATCTAGAGAAACTTAGCTCGTACTTGTTAGATATGTATAAGGTCGATGCAGGAACACAA 3416

Qy   2871 TAGCAATTACAGATGGATGCAGTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAA 2930
          |||||||||||||| ||  | ||||||||||||   ||||| ||||| ||| | || ||
Db   3417 TAGCAATTACAGATTGACTCGGTGTTCAAAGGTTCCAATCTTTTTGTTGCAGCGCCAAAG 3476

Qy   2931 TCAGGAGACTTTCCAGATCTACAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACT 2990
           | || ||  || | ||| | ||||| || || |||   || ||||| || || || ||
Db   3477 ACTGGTGATATTTCTGATATGCAGTTTTACTATGATAAGTGTCTCCCAGGCAACAGCACC 3536

Qy   2991 ATACTTAACAAGTATGATGCTGTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAG 3050
          ||  | || || | |||||||||||||||||||||   ||| | |    | ||||| ||
Db   3537 ATGATGAATAATTTTGATGCTGTTACCATGAGGTTGACTGACATTTCATTGAATGTCAAA 3596

Qy   3051 GATTGTGTTCTTGATTTTTCCAAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTA 3110
          |||||  |  | ||| | || ||   | || |   ||| |||||    |    |   |||
Db   3597 GATTGCATATTGGATATGTCTAAGTCTGTTGCTGCGCCTAAGGATCAAATCAAACCACTA 3656

Qy   3111 GAGCCAGTTTTGCGTACCGCGGCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTG 3170
             ||  |  | || || ||||| |||  |||| |     | |||||| | |||||| |
Db   3657 ATACCTATGGTACGAACGGCGGCAGAAATGCCACGCCAGACTGGACTATTGGAAAATTTA 3716

Qy   3171 GTTGCAATGATTAAAAGAAATTTCAACGCACCAGACCTGACGGGGACGATTGACATTGAG 3230
          || || ||||||||||| || || |||||||| ||  || | || |  ||||| |||||
Db   3717 GTGGCGATGATTAAAAGGAACTTTAACGCACCCGAGTTGTCTGGCATCATTGATATTGAA 3776

Qy   3231 AGCACCGCATCTGTTGTAGTAGATAAGTTTTTTGATAGCTATTTTATTAAAAAAGAAAAA 3290
          |  || ||||||| | || |||||||||||||||||||| |||||  ||||| || ||| |
Db   3777 AATACTGCATCTTTAGTTGTAGATAAGTTTTTTGATAGTTATTTGCTTAAAGAAAAAAGA 3836

Qy   3291 TACACAAAAAATATTGCTGGAGTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAAC 3350
           |  |||| || | || |    || | |  |  || ||  | |  |||||||| |||||
Db   3837 AAACCAAATAAAAATGTTTCTTTGTTCAGTAGAGAGTCTCTCAATAGATGGTTAGAAAAG 3896

Qy   3351 AGGAAAGAAGTACTATTGGACGACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATC 3410
            | || | |||  | | | | |  | ||  | |   |||||  |||| |||| ||  |
Db   3897 CAGGAACAGGTAACAATAGGCCAGCTCGCAGATTTTGATTTTGTAGATTTGCCAGCAGTT 3956

Qy   3411 GATCAGTACAAGCACATGATCAAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAG 3470
          ||||||||||  |||||||| || |||||| || || |||||||||  |||||| ||
Db   3957 GATCAGTACAGACACATGATTAAAGCACAACCCAAGCAAAAATTGGACACTTCAATCCAA 4016

Qy   3471 AATGAATACCCTGCTCTGCAAACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTG 3530
          |  || ||||| ||| |||| || ||||| |||||||| ||  ||||||| |  || ||
Db   4017 ACGGAGTACCCGGCTTTGCAGACGATTGTGTACCATTCAAAAAAGATCAATGCAATATTT 4076

Qy   3531 GCCGGTTTCT---CAGAGCTTACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTT 3587
```

```
Db       4077 GGCCCGTTGTTTAGTGAGCTTACTAGGCAATTACTGGACAGTGTTGATTCGAGCAGATTT 4136

Qy       3588 CTTTTCTTTACTAGGAAAACTCCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCG 3647

Db       4137 TTGTTTTTCACAAGAAAGACACCAGCGCAGATTGAGGATTTCTTCGGAGATCTCGACAGT 4196

Qy       3648 CACGTTCCTATGGATGTGTTAGAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAG 3707

Db       4197 CATGTGCCGATGGATGTCTTGGAGCTGGATATATCAAAATACGACAAATCTCAGAATGAA 4256

Qy       3708 TTTCATTGTGCTGTAGAGTATGAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCC 3767

Db       4257 TTCCACTGTGCAGTAGAATACGAGATCTGGCGAAGATTGGGTTTTGAAGACTTCTTGGGA 4316

Qy       3768 GAAGTGTGGAAACAAGGGCACAGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAG 3827

Db       4317 GAAGTTTGGAAACAAGGGCATAGAAAGACCACCCTCAAGGATTATACCGCAGGTATAAAA 4376

Qy       3828 ACATGTCTGTGGTATCAAAGGAAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTT 3887

Db       4377 ACTTGCATCTGGTATCAAAGAAAGAGCGGGGACGTCACGACGTTCATTGGAAACACTGTG 4436

Qy       3888 ATAATAGCAGCTTGCTTGGGTTCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTT 3947

Db       4437 ATCATTGCTGCATGTTTGGCCTCGATGCTTCCGATGGAGAAAATAATCAAAGGAGCCTTT 4496

Qy       3948 TGTGGAGACGATTCCGTTTTGTATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCA 4007

Db       4497 TGCGGTGACGATAGTCTGCTGTACTTTCCAAAGGGTTGTGAGTTTCCGGATGTGCAACAC 4556

Qy       4008 TGTGCTAATCTCATGTGGAATTTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTT 4067

Db       4557 TCCGCGAATCTTATGTGGAATTTTGAAGCAAAACTGTTTAAAAAACAGTATGGATACTTT 4616

Qy       4068 TGTGGTAGATACATCATACACCATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAG 4127

Db       4617 TGCGGAAGATATGTAATACATCACGACAGAGGATGCATTGTGTATTACGATCCCCTAAAG 4676

Qy       4128 TTGATCTCCAAACTTGGGGCAAAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGG 4187

Db       4677 TTGATCTCGAAACTTGGTGCTAAACACATCAAGGATTGGGAACACTTGGAGGAGTTCAGA 4736

Qy       4188 GTGTCTTTGTGCGATGTTGCTTGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTG 4247

Db       4737 AGGTCTCTTTGTGATGTTGCTGTTTCGTT---GAACAATTGTGCGTATTACACACAGTTG 4793

Qy       4248 AACGCAGCTATCAAGGAGGTTCATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGT 4307

Db       4794 GACGACGCTGTATGGGAGGTTCATAAGACCGCCCCTCCAGGTTCGTTTGTTTATAAAAGT 4853

Qy       4308 GTTAACAAATTTTTGTGTGATAAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAG 4367

Db       4854 CTGGTGAAGTATTTGTCTGATAAAGTTCTTTTTAGAAGTTTGTTTATAGATGGCTCTAGT 4913

Qy       4368 TCTCAGAGATACTGTCAAAATTAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACT 4427

Db       4914 TGTTAAAGGAAAAGTGAATATCAATGAGTTTATCGACCTGACAAAAATGGAGAAGATCTT 4973

Qy       4428 TCCGGCATTCATGACTAAGGTCAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGC 4487

Db       4974 ACCGTCGATGTTTACCCCTGTAAAGAGTGTTATGTGTTCCAAAGTTGATAAAATAATGGT 5033

Qy       4488 TGTTAAGAATGATAGTCTTTCTGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAA 4547

Db       5034 TCATGAGAATGAGTCATTGTCAGAGGTGAACCTTCTTAAAGGAGTTAAGCTTATTGATAG 5093

Qy       4548 AGGGTATGTGTGCTTAGCTGATTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTG 4607

Db       5094 TGGATACGTCTGTTTAGCCGGTTTGGTCGTCACGGGCGAGTGGAACTTGCCTGACAATTG 5153

Qy       4608 CCGTGGTGGTGTCAGTGTTTGTATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAAC 4667

Db       5154 CAGAGGAGGTGTGAGCGTGTGTCTGGTGGACAAAAGGATGGAAAGAGCCGACGAGGCCAC 5213

Qy       4668 GCTGGGTGCGTATCACGCCCCTGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAA 4727

Db       5214 TCTCGGATCTTACTACACAGCAGCTGCAAAGAAAAGATTTCAGTTCAAGGTCGTTCCCAA 5273

Qy       4728 TTATTCAATAACATCCGAGGATGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAA 4787

Db       5274 TTATGCTATAACCACCCAGGACGCGATGAAAAACGTCTGGCAAGTTTTAGTTAATATTAG 5333

Qy       4788 AGGAGTGGCTATGGAAGAAGGATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGT 4847

Db       5334 AAATGTGAAGATGTCAGCGGGTTTCTGTCCGCTTTCTCTGGAGTTTGTGTCGGTGTGTAT 5393

Qy       4848 AGTACATAAAAATAATGTAAGAAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGG 4907

Db       5394 TGTTTATAGAAATAATATAAAATTAGGTTTGAGAGAGAAGATTACAAACGTGAGAGACGG 5453

Qy       4908 CTCGCCAATTGAACTCACTGAAAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGC 4967

Db       5454 AGGGCCCATGGAACTTACAGAAGAAGTCGTTGATGAGTTCATGGAAGATGTCCCTATGTC 5513

Qy       4968 TGTGA 4972

Db       5514 GATCA 5518


RESULT 15
US-10-684-134-1
; Sequence 1, Application US/10684134
; Publication No. US20040142433A1
; GENERAL INFORMATION:
;  APPLICANT: Large Scale Biology Corporation
;  TITLE OF INVENTION: POPULATION OF POLYNUCLEOTIDE SEQUENCE VARIANTS
;  FILE REFERENCE: LSBC-PLG5392-CIP
;  CURRENT APPLICATION NUMBER: US/10/684,134
;  CURRENT FILING DATE:  2003-10-10
;  PRIOR APPLICATION NUMBER: 60/402,342
;  PRIOR FILING DATE: 2002-08-08
;  PRIOR APPLICATION NUMBER: 10/066,390
;  PRIOR FILING DATE: 2002-02-01
;  PRIOR APPLICATION NUMBER: 60/268,785
;  PRIOR FILING DATE: 2001-02-14
;  PRIOR APPLICATION NUMBER: 60/266,386
;  PRIOR FILING DATE: 2002-02-02
;  NUMBER OF SEQ ID NOS: 35
;  SOFTWARE: PatentIn version 3.1
; SEQ ID NO 1
;   LENGTH: 10600
;   TYPE: DNA
;   ORGANISM: Artificial Sequence
;   FEATURE:
;   OTHER INFORMATION: TMV infectious clone containing CEL I gene
US-10-684-134-1

  Query Match             40.8%;  Score 2031;  DB 19;  Length 10600;
  Best Local Similarity   63.6%;  Pred. No. 0;
  Matches 3169;  Conservative    0;  Mismatches 1795;  Indels   21;  Gaps    4;

Qy          6 AAGGTAATTCCTGAGTTTCAAAGGGAGGCTTTTAACAGGTATGCAGAAGCTCCCAACGAA 65

Db        537 AAAACAGTCCCCAACTTCCAAAAGGAAGCATTTGACAGATACGCAGAAATTCCTGAAGAC 596

Qy         66 GTCTGCTGCTCTAAAACTTTTCAGGATTGTCGAATACATCCGCCAGAGAATAGTGGTAGA 125

Db        597 GCTGTCTGTCACAATACTTTCCAGACAATGCGACATCAGCCGATGCAGCAATCAGGCAGA 656

Qy        126 AGATACGCTGTTGCTCTGCACAGTTTGTATGATATTCCTGTGCATGAGTTTGGAGCTGCG 185

Db        657 GTGTATGCCATTGCGCTACACAGCATATATGACATACCAGCCGATGAGTTCGGGGCGGCA 716

Qy        186 TTAATATCTAAGAATATACATGTATGTTATGCAGCTTCCATTTTGGCAGAAGCATTATTA 245
```

```
Db     717 CTCTTGAGGAAAAATGTCCATACGTGCTATGCCGCTTTCCACTTCTCTGAGAACCTGCTT 776

Qy     246 CTAGACCAGACGGAGGTTACGCTTAATGAAATAGGCGCAACTTTCAAAAGAGAAGGTGAT 305
           || ||  |  |  | || |   |  | |||||   |||   |||     | || || ||
Db     777 CTTGAAGATTCATACGTCAATTTGGACGAAATCAACGCGTGTTTTTCGCGCGATGGAGAC 836

Qy     306 GATGTTTCTTTTTTCTTTGCTGATGAAAGTACTTTAAATTATAGTCATAAATACAAAAAT 365
            |  |  | ||||  |||||    || |||||| | |||||| |||||| ||    |||
Db     837 AAGTTGACCTTTTCTTTTGCATCAGAGAGTACTCTTAATTATTGTCATAGTTATTCTAAT 896

Qy     366 ATCTTGCATTATGTAGTTAAATCTTACTTTCCTGCTTCTAGTAGAATAGTTTACTTTAAG 425
           ||  |  | |||||    ||| ||||||| || || |||| ||||   |||||| | |||
Db     897 ATTCTTAAGTATGTGTGCAAAACTTACTTCCCGGCCTCTAATAGAGAGGTTTACATGAAG 956

Qy     426 GAATTTTTAGTCACTAGGGTTAATACTTGGTTTTGTAAATTTACCAAAGTAGATACCTAT 485
           || ||||||||||||| || |||||| ||||||||||| ||| | | | ||||||| | |
Db     957 GAGTTTTTAGTCACCAGAGTTAATACCTGGTTTTGTAAGTTTTCTAGAATAGATACTTTT 1016

Qy     486 ATTCTGTACAAGAGTGTTAGACAAGTAGGGTGTGATAGTGATCAGTTCTATGAGGCGATG 545
            || |||||||  ||||    ||   | |    ||||||||| ||||| |||   || |||
Db    1017 CTTTTGTACAAAGGTGTGGCCCATAAAAGTGTAGATAGTGAGCAGTTTTATACTGCAATG 1076

Qy     546 GAAGACGCCTTTGCTTACAAGAAAACCTTGGCCATGTTCAACACTGAAAGAGCAATCTTT 605
           |||||||| |    |||||| || ||  | || |||| |||||  || ||    || ||
Db    1077 GAAGACGCATGGCATTACAAAAAGACTCTTGCAATGTGCAACAGCGAGAGAATCCTCCTT 1136

Qy     606 AGAGACACGGCTTCGGTTAACTTTTGGTTCCCTAAGATGAAGGACATGGTGATAGTACCG 665
              ||  |  | || || || |  |||||  || || |||| ||| ||||| || |||||
Db    1137 GAGGATTCATCATCAGTCAATTACTGGTTTCCCAAAATGAGGGATATGGTCATCGTACCA 1196

Qy     666 CTGTTTGAGGGTTCTATTACCAGCAAAAAGATGACAAGGAGTGAGGTCATTGTTAATCGT 725
            | || ||   |||| |    |  |  |||| |||  | |  || ||| | ||
Db    1197 TTATTCGACATTTCTTTGGAGACTAGTAAGAGGACGCGCAAGGAAGTCTTAGTGTCCAAG 1256

Qy     726 GACTTCGTTTACACAGTGCTTAATCATATCAGAACATATCAAGCCAAAGCGTTAACTTAC 785
           || ||||| |  |||||||||||| || || ||||||| || || |||||  | || |||
Db    1257 GATTTCGTGTTTACAGTGCTTAACCACATTCGAACATACCAGGCGAAAGCTCTTACATAC 1316

Qy     786 CAGAACGTATTATCTTTCGTGGAGTCTATAAGATCCCGCGTGATAATCAATGGTGTTACT 845
              || || || || || || || || || || ||||  | || || || ||||| ||
Db    1317 GCAAATGTTTTGTCCTTTGTCGAATCGATTCGATCGAGGGTAATCATTAACGGTGTGACA 1376

Qy     846 GCTAGGTCTGAATGGGATGTAGATAAAGCAATTCTTCAACCCTTGTCAATGACTTTCTTC 905
           || ||||| ||||||||||| || ||| |  |  | ||| ||||||| ||||| || | |
Db    1377 GCGAGGTCCGAATGGGATGTGGACAAATCTTTGTTACAATCCTTGTCCATGACGTTTTAC 1436

Qy     906 TTGCAGACTAAGCTGGCTGCGCTTCAAGACGATATAGTAATGGGAAAGTTTCGGTGCTTG 965
            |||| |||||||| || |  ||  | || ||  || | ||  | |||||| |   |
Db    1437 CTGCATACTAAGCTTGCCGTTCTAAAGGATGACTTACTGATTAGCAAGTTTAGTCTCGGT 1496

Qy     966 GATAAGACCACTTCTGAACTTATTTGGGATGAGGTGGGCAAATTTTTTGGAAACGTTTTC 1025
              || ||    |   | | | | |||||||||| |          ||||| ||||  ||
Db    1497 TCGAAAACGGTGTGCCAGCATGTGTGGGATGAGATTTCGCTGGCGTTTGGGAACGCATTT 1556

Qy    1026 CCCACTATCAAAGAGAGATTGGTGAGCAGGAAAATTCTGGATGTAAGTGAGAATGCTCTG 1085
           ||| |  | |||||||||  |  ||| |||||| || |    ||    |   | ||  |
Db    1557 CCCTCCGTGAAAGAGAGGCTCTTGAACAGGAAACTTATCAGAGTGGCAGGCGACGCATTA 1616

Qy    1086 AAGATCAAGATCCCAGATCTGTATGTCACATGGAAAGACAGGTTCGTAGCTGAATACACC 1145
            |||||| | | || ||||| ||||| || |   | |||||| || ||  |||| ||||
Db    1617 GAGATCAGGGTGCCTGATCTATATGTGACCTTCCACGACAGATTAGTGACTGAGTACAAG 1676

Qy    1146 AAGTCTGAGGAGTTACCGCATCTAGATATCAAGAAGGACTTAGAAGAAGCTGAGCAAATG 1205
              |||| |||  | ||    || || || | |||| |  | |||||| |  ||    |||
Db    1677 GCCTCTGTGGACATGCCTGCGCTTGACATTAGGAAGAAGATGGAAGAAACGGAAGTGATG 1736

Qy    1206 TACGACGCGTTATCAGAATTATCTATCCTTAAGGGTGCTGATAATTTCGATATCGCGAAG 1265
           ||| | ||  | ||||| |||||  |  | | ||   ||||| || ||||||| | |
Db    1737 TACAATGCACTTTCAGAGTTATCGGTGTTAAGGGAGTCTGACAAATTCGATGTTGATGTT 1796

Qy    1266 TTCAAAGACATGTGCAAGGCTTTAGATGTTAGTCCTGATGTGGCAGCACGAGTAATCGTT 1325
           ||     | ||||| |  |||| || |||   ||       ||||||     || || ||
Db    1797 TTTTCCCAGATGTGCCAATCTTTGGAAGTTGACCCAATGACGGCAGCGAAGGTTATAGTC 1856

Qy    1326 GCAGTGGCCGAGAATAGAAGCGGTTTAACTCTTACTTTTGATAAGCCAACCGAGGAGAAT 1385
           || ||       |||  | |||||| | ||||| || || ||||||    || ||  |||| ||||
Db    1857 GCGGTCATGAGCAATGAGAGCGGTCTGACTCTCACATTTGAACGACCTACTGAGGCGAAT 1916

Qy    1386 GTGGCTAAGGCTCT------TAAAAGCACGGCGTCTGAGGCCGTGGTATGTCTTGAACCG 1439
           || ||    ||| |      | ||   | ||| || || |  |   |     ||    |
Db    1917 GTTGCGCTAGCTTTACAGGATCAAGAGAAGGCTTCAGAAGGTGCTTTGGTAGTTACCTCA 1976

Qy    1440 ACATCCGAAGAGGTGAACGTAAATAAATTTTCTATTGCTGAGAAAGGGAGATTGCCTGTG 1499
           | |   |  || |         |  ||   ||| || ||      || |  |      |
Db    1977 AGAGAAGTTGAAGAACCGTCCATGAAGGGTTCGATGGCCAGAGGAGAGTTACAATTAGCT 2036

Qy    1500 TGTGCAGAAAGTCATGGTTTGACGAATGCTAACTTAGAGCACCAGGAGTTGGAGTCCCTC 1559
            ||   |   |  ||  |  |  |    |  | |   || || ||||| | |||||  |
Db    2037 GGTCTTGCTGGAGATCATCCGGAGTCGTCCTATTCTAAGAACGAGGAGATAGAGTCTTTA 2096

Qy    1560 AACGATTTCCATAAGGCTTGCGTGGATAGTGTGATTACAAAGCAAATGGCATCGGTTGTC 1619
            |  | || |||| |||    |  |||    | |||   ||||| |||    ||| ||||
Db    2097 GAGCAGTTTCATATGGCAACGGCAGATTCGTTAATTCGTAAGCAGATGAGCTCGATTGTG 2156

Qy    1620 TACACTGGCTCACTCAAAGTTCAACAAATGAAGAACTATGTGGACAGTTTGGCAGCTTCG 1679
           ||||| ||  |  | ||||||||| |||||||| |||| | | || ||  ||| ||| ||
Db    2157 TACACGGGTCCGATTAAAGTTCAGCAAATGAAAAACTTTATCGATAGCCTGGTAGCATCA 2216

Qy    1680 TTGTCCGCCACTGTATCAAATCTATGCAAGTCACTAAAGGATGAAGTCGGGTATGATTCT 1739
            | || ||  | || || ||||||   ||||   || || |||  ||  |    |||   |
Db    2217 CTATCTGCTGCGGTGTCGAATCTCGTCAAGATCCTCAAAGATACAGCTGCTATTGACCTT 2276

Qy    1740 GATTCCAGGGAGAAAGTTGGTGTTTGGGATGTCACTTTGAAAAAGTGGCTCCTCAAACCT 1799
           ||  || |  | ||  |||| || | ||||||  | |  |  |||||| |  |||||||
Db    2277 GAAACCCGTCAAAAGTTTGGAGTCTTGGATGTTGCATCTAGGAAGTGGTTAATCAAACCA 2336

Qy    1800 GCGGCCAAAGGTCATTCATGGGGAGTTGTCCTGGATTACAAGGGGAAAATGTTTACTGCA 1859
            |||||||  ||||| |||||||| |||||        ||  | ||||      |   ||
Db    2337 ACGGCCAAGAGTCATGCATGGGGTGTTGTTGAAACCCACGCGAGGAAGTATCATGTGGCG 2396

Qy    1860 CTTCTATCTTATGAAGGAGATAGAATGGTGACTGAGAGCGACTGGAGGAGGGTGGCTGTA 1919
           ||| |    ||||| |   |  |  |||||||       || ||||| || || |||||
Db    2397 CTTTTGGAATATGATGAGCAGGGTGTGGTGACATGCGATGATTGGAGAAGAGTAGCTGTC 2456

Qy    1920 TCATCTGATACAATGGTATATTCTGATATTGCAAAGCTCCAAAATCTGAGGAAAACAATG 1979
              |||||  |  |  | ||||| || || || || |||  || |||| | | |    |
Db    2457 AGCTCTGAGTCTGTTGTTTATTCCGACATGGCGAAACTCAGAACTCTGCGCAGACTGCTT 2516

Qy    1980 AGAGACGGTGAACCCCACGAACCTACTGCAAAGATGGTACTTGTGGATGGGGTGCCTGGT 2039
            || |||| ||||| || |    ||  |||||| | || | ||||||| || || || ||
Db    2517 CGAAACGGAGAACCGCATGTCAGTAGCGCAAAGGTTGTTCTTGTGGACGGAGTTCCGGGC 2576

Qy    2040 TGTGGAAAGTACAAAGGAGATTTTGAAAGATTTGATCTTGATGAGGATTTGATCTTGGTT 2099
           ||||| ||   ||||| |  | ||   ||  || || ||||||| ||| | || || ||
Db    2577 TGTGGGAAAACCAAAGAAATTCTTTCCAGGGTTAATTTTGATGAAGATCTAATTTTAGTA 2636

Qy    2100 CCTGGAAAACAAGCTGCTGCTATGATCAGAAGAAGGGCTAATTCATCTGGACTGATAAGA 2159
           ||||| || ||||| || |  ||||||||| ||| | || ||||| || ||  | ||
Db    2637 CCTGGGAAGCAAGCCGCGGAAATGATCAGAAGACGTGCGAATTCCTCAGGGATTATTGTG 2696

Qy    2160 GCCACAATGGACAATGTGAGAACGGTAGATTCACTTCTAATGCAT---------CCAAAA 2210
           ||||| | ||||| || | ||| || |||||  |  | ||| ||              | |
Db    2697 GCCACGAAGGACAACGTTAAAACCGTTGATTCTTTCATGATGAATTTTGGGAAAAGCACA 2756

Qy    2211 CCGCGATCACACAAGAGGCTTTTTATTGATGAAGGGTTGATGCTGCACACCGGTTGTGTT 2270
           |   |      ||||||| | || ||||||||||||||||| || |||| || |||||||||
Db    2757 CGCTGTCAGTTCAAGAGGTTATTCATTGATGAAGGGTTGATGTTGCATACTGGTTGTGTT 2816

Qy    2271 AACTTCCTGGTGCTTATCTCTGGTTGCGACATCGCATACATTTACGGAGATACACAGCAG 2330
           || || || |||   || ||    |||||  || |||||  |||||||||| |||||||||
Db    2817 AATTTTCTTGTGGCGATGTCATTGTGCGAAATTGCATATGTTTACGGAGACACACAGCAG 2876

Qy    2331 ATTCCTTTCATTAACAGAGTTCAGAATTTCCCGTATCCCAAACATTTTGAGAAGCTGCAA 2390
           ||||| | ||| || ||||||      |||||||| |||   |||||||   ||  || ||
Db    2877 ATTCCATACATCAATAGAGTTTCAGGATTCCCGTACCCCGCCCATTTTGCCAAATTGGAA 2936
```

```
Qy        2391 GTGGATGAAGTTGAGATGAGGAGGACCACACTGAGATGCCCAGGTGATGTGAATTTTTTC 2450
               || || || || ||||   | || || || ||  | || ||||  ||||| |    ||
Db        2937 GTTGACGAGGTGGAGACACGCAGAACTACTCTCCGTTGTCCAGCCGATGTCACACATTAT 2996

Qy        2451 CTACAATCGAAGTACGAAGGAGCGGTGACAACCACTTCAACTGTACAACGATCGGTCTCA 2510
               ||  |   ||  || || ||    || |  | ||||||  | ||  ||   || || ||
Db        2997 CTGAACAGGAGATATGAGGGCTTTGTCATGAGCACTTCTTCGGTTAAAAAGTCTGTTTCG 3056

Qy        2511 TCTGAGATGATAGGCGGTAAGGGAGTACTAAACAGTGTTTCCAAACCACTAAAAGGGAAA 2570
                  |||||| | |||||    |  ||  | ||     | || |||||  |  | || ||
Db        3057 CAGGAGATGGTCGGCGGAGCCGCCGTGATCAATCCGATCTCAAAACCCTTGCATGGCAAG 3116

Qy        2571 ATTGTAACTTTCACTCAGGCTGATAAATTTGAGTTAGAGGAGAAGGGCTATAAGAATGTG 2630
               ||  | ||||| || ||  | ||||||   |   |       |  || |||    ||||
Db        3117 ATCCTGACTTTTACCCAATCGGATAAAGAAGCTCTGCTTTCAAGAGGGTATTCAGATGTT 3176

Qy        2631 AACACCGTTCATGAGATCCAAGGAGAAACCTTTGAAGATGTGTCGCTGGTCAGATTGACG 2690
                |||| || |||||  | ||||| || || |     ||||| || || || || || ||
Db        3177 CACACTGTGCATGAAGTGCAAGGCGAGACATACTCTGATGTTTCACTAGTTAGGTTAACC 3236

Qy        2691 GCAACTCCACTGACTCTGATTTCCAAGTCTTCCCCGCATGTTCTAGTCGCTCTGACTAGA 2750
                | || ||| |  |  | ||| |         ||| |||||| | |||||  || | ||
Db        3237 CCTACACCAGTCTCCATCATTGCAGGAGACAGCCCACATGTTTTGGTCGCATTGTCAAGG 3296

Qy        2751 CACACAAAGAGCTTCAAATATTACACCGTAGTGTTAGATCCTTTAGTACAGATAATTAGT 2810
               |||||        |||| || ||||| || ||  | |||||||||||    || |||||
Db        3297 CACACCTGTTCGCTCAAGTACTACACTGTTGTTATGGATCCTTTAGTTAGTATCATTAGA 3356

Qy        2811 GATTTGTCTTCTTTAAGCTCCTTCCTTTTAGAAATGTATATGGTAGAAGCAGGTAGTAGA 2870
               ||| |        | ||||| | | | ||||| ||||||| ||| || ||||| |    |
Db        3357 GATCTAGAGAAACTTAGCTCGTACTTGTTAGATATGTATAAGGTCGATGCAGGAACACAA 3416

Qy        2871 TAGCAATTACAGATGGATGCAGTGTTCAAAGGTCATAATCTCTTTGTGGCAACACCTAAA 2930
               |||||||||||||| ||  | ||||||||||||   ||||| ||||| ||| | || ||
Db        3417 TAGCAATTACAGATTGACTCGGTGTTCAAAGGTTCCAATCTTTTTGTTGCAGCGCCAAAG 3476

Qy        2931 TCAGGAGACTTTCCAGATCTACAGTTCTATTACGATGTATGCCTCCCTGGTAATAGTACT 2990
                | || ||  || | ||| | ||||| || || |||   || ||||| || || || ||
Db        3477 ACTGGTGATATTTCTGATATGCAGTTTTACTATGATAAGTGTCTCCCAGGCAACAGCACC 3536

Qy        2991 ATACTTAACAAGTATGATGCTGTTACCATGAGGTTACGTGATAATAGTCTTAATGTGAAG 3050
               ||  | || || | ||||||||||||||||||||||||   ||| | |    | ||||| ||
Db        3537 ATGATGAATAATTTTGATGCTGTTACCATGAGGTTGACTGACATTTCATTGAATGTCAAA 3596

Qy        3051 GATTGTGTTCTTGATTTTTCCAAAAGTATTCCGATGCCAAAGGAGGTGAAACCATGTCTA 3110
               |||||  |  | ||| | || ||   | || |   ||| |||||    |    |   |||
Db        3597 GATTGCATATTGGATATGTCTAAGTCTGTTGCTGCGCCTAAGGATCAAATCAAACCACTA 3656

Qy        3111 GAGCCAGTTTTGCGTACCGCGGCGGAACCGCCAAGGGCTGCAGGACTACTCGAAAATCTG 3170
                  ||  |  | || || ||||| |||  |||| |     | |||||| | |||||| |
Db        3657 ATACCTATGGTACGAACGGCGGCAGAAATGCCACGCCAGACTGGACTATTGGAAAATTTA 3716

Qy        3171 GTTGCAATGATTAAAAGAAATTTCAACGCACCAGACCTGACGGGGACGATTGACATTGAG 3230
               || || ||||||||||| || || |||||||| ||  || | || |  ||||| |||||
Db        3717 GTGGCGATGATTAAAAGGAACTTTAACGCACCCGAGTTGTCTGGCATCATTGATATTGAA 3776

Qy        3231 AGCACCGCATCTGTTGTAGTAGATAAGTTTTTTGATAGCTATTTTATTAAAAAAGAAAAA 3290
               |  || |||||| | || ||||||||||||||||||| |||||  ||||| || ||| |
Db        3777 AATACTGCATCTTTAGTTGTAGATAAGTTTTTTGATAGTTATTTGCTTAAAGAAAAAAGA 3836

Qy        3291 TACACAAAAAATATTGCTGGAGTGATGACGAAGGATTCAATGATGAGATGGTTGGAAAAC 3350
                |  |||| || | || |    || | |  |  || ||  | |  |||||||| |||||
Db        3837 AAACCAAATAAAAATGTTTCTTTGTTCAGTAGAGAGTCTCTCAATAGATGGTTAGAAAAG 3896

Qy        3351 AGGAAAGAAGTACTATTGGACGACTTGGCTAACTACAATTTTACAGATCTGCCGGCCATC 3410
                 | || | |||  | | | | |  | ||  | |   |||||  |||| |||| ||  |
Db        3897 CAGGAACAGGTAACAATAGGCCAGCTCGCAGATTTTGATTTTGTAGATTTGCCAGCAGTT 3956

Qy        3411 GATCAGTACAAGCACATGATCAAGGCTCAACCAAAACAGAAATTGGACCTTTCAATTCAG 3470
               ||||||||||  |||||||| || || ||||| || || |||||||||  |||||| ||
Db        3957 GATCAGTACAGACACATGATTAAAGCACAACCCAAGCAAAAATTGGACACTTCAATCCAA 4016

Qy        3471 AATGAATACCCTGCTCTGCAAACAATTGTCTACCATTCGAAGCAGATCAACGGTATTTTG 3530
               |  || ||||| ||| |||| || ||||| |||||||| ||  ||||||| |  || ||
Db        4017 ACGGAGTACCCGGCTTTGCAGACGATTGTGTACCATTCAAAAAAGATCAATGCAATATTT 4076

Qy        3531 GCCGGTTTCT---CAGAGCTTACAAGGTTGCTGCTCGAGGCATTTGATTCTAAGAAGTTT 3587
               | |   || |     |||||||| |||    | || ||     ||||||| |  |  |||
Db        4077 GGCCCGTTGTTTAGTGAGCTTACTAGGCAATTACTGGACAGTGTTGATTCGAGCAGATTT 4136

Qy        3588 CTTTTCTTTACTAGGAAAACTCCAGAACAGATTCAAGAATTTTTCTCGGATCTCGACTCG 3647
                | || || || || || ||||  |||||| | || || |||   |||||||||
Db        4137 TTGTTTTTCACAAGAAAGACACCAGCGCAGATTGAGGATTTCTTCGGAGATCTCGACAGT 4196

Qy        3648 CACGTTCCTATGGATGTGTTAGAACTGGATATTTCTAAGTATGATAAGTCACAGAACGAG 3707
               || || || |||||||| || || |||||||| || || || || || || ||||| ||
Db        4197 CATGTGCCGATGGATGTCTTGGAGCTGGATATATCAAAATACGACAAATCTCAGAATGAA 4256

Qy        3708 TTTCATTGTGCTGTAGAGTATGAAATATGGAAAAGATTGGGTCTCAATGAGTTTTTGGCC 3767
               || || ||||| ||||| || || || |||  |||||||||| |  | || || ||||
Db        4257 TTCCACTGTGCAGTAGAATACGAGATCTGGCGAAGATTGGGTTTTGAAGACTTCTTGGGA 4316

Qy        3768 GAAGTGTGGAAACAAGGGCACAGGAAAACAACTTTGAAGGATTACATTGCTGGAATCAAG 3827
               ||||| ||||||||||||||| || || ||  | ||||||||| |  || || |  ||
Db        4317 GAAGTTTGGAAACAAGGGCATAGAAAGACCACCCTCAAGGATTATACCGCAGGTATAAAA 4376

Qy        3828 ACATGTCTGTGGTATCAAAGGAAAAGCGGTGATGTGACTACTTTCATCGGCAATACTGTT 3887
               || ||  | ||||||||||| || ||||| || || || || ||||| || || |||||
Db        4377 ACTTGCATCTGGTATCAAAGAAAGAGCGGGGACGTCACGACGTTCATTGGAAACACTGTG 4436

Qy        3888 ATAATAGCAGCTTGCTTGGGTTCAATGTTACCGATGGAAAAGGTCATAAAAGGTGCTTTT 3947
               || || || || || ||||  || ||| | |||||||| ||  | || ||||| || |||
Db        4437 ATCATTGCTGCATGTTTGGCCTCGATGCTTCCGATGGAGAAAATAATCAAAGGAGCCTTT 4496

Qy        3948 TGTGGAGACGATTCCGTTTTGTATTTTCCAAAGGGTTTGGATTTCCCTGACATTCAGTCA 4007
               || ||||||||    |  |||| ||||||||||||||  || || || ||  | ||
Db        4497 TGCGGTGACGATAGTCTGCTGTACTTTCCAAAGGGTTGTGAGTTTCCGGATGTGCAACAC 4556

Qy        4008 TGTGCTAATCTCATGTGGAATTTTGAGGCCAAACTGTATAGAAAGAGGTACGGTTACTTT 4067
               |  || ||||| |||||||||||||| || ||||||| || |||   ||| || ||||||
Db        4557 TCCGCGAATCTTATGTGGAATTTTGAAGCAAAACTGTTTAAAAAACAGTATGGATACTTT 4616

Qy        4068 TGTGGTAGATACATCATACACCATGATAAGGGAGCAATAGTGTATTATGATCCTTTGAAG 4127
               || || |||||  | ||||| || || |  |||   || |||||||| |||||  | |||
Db        4617 TGCGGAAGATATGTAATACATCACGACAGAGGATGCATTGTGTATTACGATCCCCTAAAG 4676

Qy        4128 TTGATCTCCAAACTTGGGGCAAAACATATCAAGGATTATGATCACTTAGAAGAGTTAAGG 4187
               |||||||| |||||||| || ||||| ||||||||||  || ||||| || ||||| ||
Db        4677 TTGATCTCGAAACTTGGTGCTAAACACATCAAGGATTGGGAACACTTGGAGGAGTTCAGA 4736

Qy        4188 GTGTCTTTGTGCGATGTTGCTTGTTCGCTCGGAAACTGGTGCTTAGGCTTTCCGCAGCTG 4247
                 |||| | || ||||||||||  |||| |    |||   ||       |   | ||| ||
Db        4737 AGGTCTCTTTGTGATGTTGCTGTTTCGTT---GAACAATTGTGCGTATTACACACAGTTG 4793

Qy        4248 AACGCAGCTATCAAGGAGGTTCATAAAACCGCGATTGATGGTTCGTTTGCTTTTAATTGT 4307
                |||  ||| |   ||||||||||||| |||||   |   |||||||||| || |||  ||
Db        4794 GACGACGCTGTATGGGAGGTTCATAAGACCGCCCCTCCAGGTTCGTTTGTTTATAAAAGT 4853

Qy        4308 GTTAACAAATTTTTGTGTGATAAATTTTTATTTAGAACTTTGTTTTTAAATGGCTGTTAG 4367
                |    || | ||||| ||||||| || | ||||||| ||||||| || |||||| |
Db        4854 CTGGTGAAGTATTTGTCTGATAAAGTTCTTTTTAGAAGTTTGTTTATAGATGGCTCTAGT 4913

Qy        4368 TCTCAGAGATACTGTCAAAATTAGCGAGTTCATTGATCTTTCGAAACAGGATGAGATACT 4427
               | | | ||  |  || || || |  ||||| || || ||  | |||  |||  ||||  |
Db        4914 TGTTAAAGGAAAAGTGAATATCAATGAGTTTATCGACCTGACAAAAATGGAGAAGATCTT 4973

Qy        4428 TCCGGCATTCATGACTAAGGTCAAGAGTGTTAGAATATCGACTGTGGACAAGATTATGGC 4487
                ||| |  |  | ||    || ||||||||||     || |  || || || || ||||
Db        4974 ACCGTCGATGTTTACCCCTGTAAAGAGTGTTATGTGTTCCAAAGTTGATAAAATAATGGT 5033

Qy        4488 TGTTAAGAATGATAGTCTTTCTGATGTAGATTTACTTAAAGGTGTTAAGTTAGTTAAGAA 4547
               |  | |||||||     | || || ||  |  | |||||||| |||||| |  ||  | |
Db        5034 TCATGAGAATGAGTCATTGTCAGAGGTGAACCTTCTTAAAGGAGTTAAGCTTATTGATAG 5093

Qy        4548 AGGGTATGTGTGCTTAGCTGATTTGGTAGTGTCTGGGGAGTGGAATCTCCCGGATAACTG 4607
                || || || || ||||| | |||||| ||  | || ||||||||  | || || || ||
```

```
Db        5094 TGGATACGTCTGTTTAGCCGGTTTGGTCGTCACGGGCGAGTGGAACTTGCCTGACAATTG 5153

Qy        4608 CCGTGGTGGTGTCAGTGTTTGTATTGTAGATAAGAGAATGAAAAGGAGTAAGGAAGCAAC 4667
               | | || ||||| || || ||| | || || || || ||| ||||     | || || ||
Db        5154 CAGAGGAGGTGTGAGCGTGTGTCTGGTGGACAAAAGGATGGAAAGAGCCGACGAGGCCAC 5213

Qy        4668 GCTGGGTGCGTATCACGCCCCTGCTTGCAAAAAGAATTTTTCTTTTAAGCTAATCCCTAA 4727
                || ||  | ||  || |  | |||   || || |  |||   || ||| |  | || ||
Db        5214 TCTCGGATCTTACTACACAGCAGCTGCAAAGAAAAGATTTCAGTTCAAGGTCGTTCCCAA 5273

Qy        4728 TTATTCAATAACATCCGAGGATGCTGAGAAGCACCCGTGGCAAGTGTTAGTGAATATCAA 4787
               |||| | |||||  || |||| ||   |||  ||   |||||||| ||||| ||||| |
Db        5274 TTATGCTATAACCACCCAGGACGCGATGAAAAACGTCTGGCAAGTTTTAGTTAATATTAG 5333

Qy        4788 AGGAGTGGCTATGGAAGAAGGATACTGTCCTTTATCTTTGGAGTTCGTTTCAATTTGTGT 4847
               |   |||   |||  ||  || | ||||||  | ||| ||||||| || ||  | ||| |
Db        5334 AAATGTGAAGATGTCAGCGGGTTTCTGTCCGCTTTCTCTGGAGTTTGTGTCGGTGTGTAT 5393

Qy        4848 AGTACATAAAAATAATGTAAGAAAAGGTTTGAGGGAACGTATTTTGAGTGTGACAGACGG 4907
                ||  ||| ||||||| ||| |  ||||||||| ||    |||   |  |||| ||||||
Db        5394 TGTTTATAGAAATAATATAAAATTAGGTTTGAGAGAGAAGATTACAAACGTGAGAGACGG 5453

Qy        4908 CTCGCCAATTGAACTCACTGAAAAGGTTGTTGAGGAGTTCGTGGATGAAGTACCAATGGC 4967
                  ||| || ||||| || ||| | || ||||| |||||| |||| || || || ||| |
Db        5454 AGGGCCCATGGAACTTACAGAAGAAGTCGTTGATGAGTTCATGGAAGATGTCCCTATGTC 5513

Qy        4968 TGTGA 4972
                 | |
Db        5514 GATCA 5518

Search completed: July 28, 2005, 18:44:52
Job time : 1905.98 secs
```